



BULLETIN

MEMPHIS
STATE
UNIVERSITY

Graduate Issue
1976-77

DEADLINE DATES

For those who expect to receive
a Master's, Specialist or
Doctorate on:

August 14 1976	December 18 1976	May 7 1977	August 13 1977
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Last Day For:

Filing "Intent to Graduate Card"	June 4	Sept. 9	Jan. 19	June 6
Final submission of theses and dissertations to the Graduate Office	Aug. 6	Dec. 10	April 29	Aug. 5
"Application to Candidacy Forms". They MUST be filed before the first day of classes for the semester in which the student plans to graduate.	June 4	Sept. 9	Jan. 19	June 6

ADDITIONAL REQUIREMENTS

Immediately after assignment of a thesis topic, the student MUST submit an "Application to Write A Thesis" to the Graduate Office.

PREFERRED DEADLINE FOR APPLYING FOR ADMISSION

It is to the advantage of the applicant to apply for admission to the Graduate School at least ONE SEMESTER IN ADVANCE of the intended registration date. An applicant should complete the application process **at least 45 days** prior to registration to be assured of being notified of his admission status before registration.

THE ESTABLISHED DEADLINES FOR REGULAR GRADUATE APPLICATIONS ARE:

Fall Semester — August 1

Spring Semester — December 1

Summer Semester — May 1

Bulletin of Memphis State University—
Graduate School Issue

Vol. LXV, Number 2

March, 1976

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The University reserves the right to cancel or alter any part of this Graduate Bulletin without notice.

BULLETIN
OF
MEMPHIS STATE UNIVERSITY

*The sixty-fifth session
will open Thursday, August 28, 1976*

GRADUATE ISSUE 1976-77

MARCH 1976
MEMPHIS, TENNESSEE

Directory for Correspondence

Inquiries will receive attention if addressed to the administrative offices below at Memphis State University, Memphis, Tennessee 38152.

Admission	Dean of The Graduate School
Assistantships and Fellowships	Chairman of appropriate department or Director of Graduate Studies of appropriate department
Degree Requirements	Dean of The Graduate School Chairman of appropriate department
Entrance Examinations	(See testing arrangements).
Financial and Business Affairs	Director of Finance
Financial Aid	Director of Student Aid
Graduate Studies	Chairman of appropriate department or Director of Graduate Studies of appropriate department
Housing	Director of University Housing
Institutes	Chairman of appropriate department
Post and Inter Sessions	Dean of The Graduate School
Publications	Office of Public Relations
Registration	Dean of The Graduate School
Research and Grants	Director of Research Administration
Testing Arrangements	Director of Testing
Transcripts	Director of Records
University Press	Director of Press
Veterans' Affairs	Coordinator of Veterans' Affairs
President of the University Administration Building (901)-454-2234	Dean of The Graduate School Administration Building (901)-454-2531

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Calendar

1976

JANUARY							FEBRUARY							MARCH							APRIL						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
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4	5	6	7	8	9	10	8	9	10	11	12	13	14	7	8	9	10	11	12	13	4	5	6	7	8	9	10
11	12	13	14	15	16	17	15	16	17	18	19	20	21	14	15	16	17	18	19	20	11	12	13	14	15	16	17
18	19	20	21	22	23	24	22	23	24	25	26	27	28	21	22	23	24	25	26	27	18	19	20	21	22	23	24
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MAY							JUNE							JULY							AUGUST						
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1977

JANUARY							FEBRUARY							MARCH							APRIL						
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1978

JANUARY							FEBRUARY							MARCH							APRIL						
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22	23	24	25	26	27	28	26	27	28					26	27	28	29	30	31		23	24	25	26	27	28	29
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MAY							JUNE							JULY							AUGUST						
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21	22	23	24	25	26	27	18	19	20	21	22	23	24	16	17	18	19	20	21	22	20	21	22	23	24	25	26
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SEPTEMBER							OCTOBER							NOVEMBER							DECEMBER						
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24	25	26	27	28	29	30								26	27	28	29	30			24	25	26	27	28	29	3

FALL SEMESTER 1976

AUGUST 26, THURSDAY

Meeting of the new members of the University faculty, University Center Ballroom, 9 a.m.

AUGUST 27, FRIDAY

Meeting of the entire University faculty, University Center Ballroom, 9 a.m., followed by meeting of the University faculty by colleges and departments.

AUGUST 28, SATURDAY

Registration—The Graduate School

AUGUST 30, MONDAY through

SEPTEMBER 1, WEDNESDAY

Registration Week—For detailed dates and times, see the *Bulletin* (Schedule of Classes) for the Fall Semester, 1976.

SEPTEMBER 2, THURSDAY

Classes meet as scheduled

SEPTEMBER 6, MONDAY

Holiday—Labor Day

SEPTEMBER 9, THURSDAY

Last day for adding courses.

Last day for making application to the Dean of The Graduate School for degrees to be conferred December, 1976. (File the "Intent to Graduate" card.)

SEPTEMBER 28, TUESDAY

Last day for removing summer session "Incomplete" grades.

OCTOBER 8, FRIDAY

Class Break.

OCTOBER 28, THURSDAY

Midsemester deficiency reports due in the Records Office.

NOVEMBER 16, TUESDAY

Last day for dropping courses.

NOVEMBER 16, TUESDAY

Last day to withdraw from the University.

NOVEMBER 24, WEDNESDAY

Last day for making application to the dean of the appropriate undergraduate college for degrees to be conferred May, 1977.

NOVEMBER 25, THURSDAY, through

NOVEMBER 28, SUNDAY

Thanksgiving Recess

DECEMBER 9, THURSDAY

Study Day

DECEMBER 10, FRIDAY

Final Examinations begin.

DECEMBER 18, SATURDAY

Commencement

SPRING SEMESTER 1977

JANUARY 8, SATURDAY

Registration—The Graduate School

JANUARY 10, MONDAY, through

JANUARY 12, WEDNESDAY

Registration Week—For detailed dates and times, see the *Bulletin* (Schedule of Classes) for the Spring Semester, 1977.

JANUARY 13, THURSDAY

Classes meet as scheduled.

JANUARY 19, WEDNESDAY

Last day for adding courses.

Last day for making application to the Dean of The Graduate School for degrees to be conferred May, 1977. (File "Intent to Graduate" card.)

FEBRUARY 1, TUESDAY

Last day for removing Fall Semester "Incomplete" grades.

MARCH 6, SUNDAY, through

MARCH 13, SUNDAY

Spring Holidays

MARCH 16, WEDNESDAY

Mid-term deficiency reports due in the Records Office.

APRIL 7, THURSDAY

Last day for dropping courses.

APRIL 7, THURSDAY

Last day to withdraw from the University.

APRIL 13, WEDNESDAY

Last day to make application to the dean of the appropriate undergraduate college for degrees to be conferred August, 1977.

APRIL 28, THURSDAY

Study Day

APRIL 29, FRIDAY

Final Examinations begin.

MAY 7, SATURDAY

Commencement

PRE-SUMMER SESSION 1977

MAY 9, MONDAY

Registration

MAY 10, TUESDAY

Classes meet as scheduled.

MAY 10, TUESDAY

Last day for late registration.

MAY 24, TUESDAY

Last day to withdraw.

MAY 27, FRIDAY

Final examinations.

SUMMER SESSIONS 1977

First Summer Term

MAY 31, TUESDAY, through

JUNE 1, WEDNESDAY

Registration—For detailed dates and times, see the *Bulletin* (Schedule of Classes) for the Summer Session, 1977.

JUNE 2, THURSDAY

Classes meet as scheduled.

JUNE 6, MONDAY

Last day for adding first term courses.

Last day for making application to the Dean of The Graduate School for degrees to be conferred August, 1977. (File "Intent to Graduate" card.)

JUNE 21, TUESDAY

Last day for removing Spring Semester "Incomplete" grades.

JUNE 29, WEDNESDAY

Last day for dropping first term courses.

JUNE 29, WEDNESDAY

Last day to withdraw from the University. (first summer term.)

JULY 4, MONDAY

Holiday—Independence Day

JULY 7, THURSDAY

Final examinations begin for the first summer term.

Second Summer Term

JULY 11, MONDAY

Course Adjustment Day

JULY 12, TUESDAY

Classes meet as scheduled.

JULY 14, THURSDAY

Last day for making application to the dean of the appropriate undergraduate college for degrees to be conferred December 1977.

AUGUST 5, FRIDAY

Last day for dropping second term courses.

AUGUST 5, FRIDAY

Last day to withdraw from the University (second summer term).

AUGUST 12, FRIDAY

* Final examinations.

AUGUST 13, SATURDAY

Commencement

Extended Summer Term

MAY 31, TUESDAY, through

JUNE 1, WEDNESDAY

Registration—For detailed dates and times, see the *Bulletin* (Schedule of Classes) for the Summer Session, 1977.

JUNE 2, THURSDAY

Classes meet as scheduled.

JUNE 7, TUESDAY

Last day to add extended term courses.

Last day for making application to the Dean of The Graduate School for degrees to be conferred August, 1977. (File "Intent to Graduate" card.)

JUNE 21, TUESDAY

Last day for removing Spring Semester "Incomplete" grades

JULY 4, MONDAY

Holiday—Independence Day

JULY 7, THURSDAY, through

JULY 8, FRIDAY

Mid-Term Break

JULY 11, MONDAY

Study Day

JULY 22, FRIDAY

Last day to drop extended term courses.

JULY 22, FRIDAY

Last day to withdraw from the University (extended term courses).

JULY 2, WEDNESDAY

Last day for making application to the dean of the appropriate undergraduate college for degrees to be conferred December 1977.

AUGUST 12, FRIDAY

Final examinations.

AUGUST 13, SATURDAY

Commencement.

TENTATIVE CALENDAR FOR 1977-78

This calendar is tentative, and students should check the 1977-78 BULLETIN for possible changes or additions.

FALL SEMESTER 1977

AUGUST 22, MONDAY through
AUGUST 25, THURSDAY
Off-campus Registrations (Exact dates, times, locations to be announced prior to registration)

AUGUST 25, THURSDAY
Meeting of the new members of the University faculty, University Center Ballroom, 9 a.m.

AUGUST 26, FRIDAY
Meeting of the entire University faculty, University Center Ballroom, 9 a.m. followed by meetings by colleges and departments

AUGUST 27, SATURDAY
Registration—The Graduate School

AUGUST 29, MONDAY through
AUGUST 31, WEDNESDAY
Registration Week—For detailed dates and times see the *Bulletin* (Schedule of Classes) for the fall semester, 1977

SEPTEMBER 1, THURSDAY
Classes meet as scheduled

SEPTEMBER 5, MONDAY
Holiday—Labor Day

SEPTEMBER 8, THURSDAY
Last day for adding courses

SEPTEMBER 27, TUESDAY
Last day for removing summer session "Incomplete" grades

OCTOBER 7, FRIDAY
Class Break

OCTOBER 27, THURSDAY
Mid-semester deficiency reports due in the Records Office

NOVEMBER 15, TUESDAY
Last day for dropping courses
Last day to withdraw from the University

NOVEMBER 23, WEDNESDAY
Last day for making application to the dean of the appropriate undergraduate college for degrees to be conferred in May, 1978

NOVEMBER 24, THURSDAY through
NOVEMBER 27, SUNDAY
Thanksgiving Recess

DECEMBER 8, THURSDAY
Study Day

DECEMBER 9, FRIDAY
Final Examinations begin

DECEMBER 17, SATURDAY
Commencement

SPRING SEMESTER 1978

JANUARY 3, TUESDAY through
JANUARY 6, FRIDAY
Off-campus Registrations (Exact dates, times, locations to be announced prior to registration)

JANUARY 7, SATURDAY
Graduate Registration

JANUARY 9, MONDAY through
JANUARY 11, WEDNESDAY
Registration Week—For detailed dates and times see the *Bulletin* (Schedule of Classes) for the spring semester, 1978

JANUARY 12, THURSDAY
Classes meet as scheduled

JANUARY 18, WEDNESDAY
Last day for adding courses

JANUARY 31, TUESDAY
Last day for removing fall semester "Incomplete" grades

MARCH 5, SUNDAY through
MARCH 12, SUNDAY
Spring Holidays

MARCH 15, WEDNESDAY
Mid-term deficiency reports due in the Records Office

APRIL 6, THURSDAY
Last day for dropping courses

APRIL 6, THURSDAY
Last day to withdraw from the University

APRIL 12, WEDNESDAY
Last day to make application to the dean of the appropriate undergraduate college for degrees to be conferred in August, 1978

APRIL 27, THURSDAY
Study Day

APRIL 28, FRIDAY
Final Examinations begin

MAY 6, SATURDAY
Commencement

PRE-SUMMER SESSION 1978

- MAY 8, MONDAY
Registration
- MAY 9, TUESDAY
Classes meet as scheduled
- MAY 9, TUESDAY
Last day for late registration
- MAY 23, TUESDAY
Last day to withdraw
- MAY 26, FRIDAY
Final Examinations

SUMMER SESSIONS 1978**First Summer Term**

- MAY 30, TUESDAY through
MAY 31, WEDNESDAY
Registration—For detailed dates and times see the
Bulletin (Schedule of Classes) for the summer
session, 1978
- JUNE 1, THURSDAY
Classes meet as scheduled
- JUNE 5, MONDAY
Last day for adding first term courses
- JUNE 20, TUESDAY
Last day for removing spring semester "In-
complete" grades
- JUNE 28, WEDNESDAY
Last day for dropping first term courses
- JUNE 28, WEDNESDAY
Last day to withdraw from the University (first
summer term)
- JULY 4, TUESDAY
Holiday—Independence Day
- JULY 6, THURSDAY
Final Examinations

Second Summer Term

- JULY 10, MONDAY
Course adjustment day and registration for second
term
- JULY 11, TUESDAY
Classes meet as scheduled
- JULY 13, THURSDAY
Last day to add or register for second term courses
- JULY 26, WEDNESDAY
Last day for making application to the dean of the
appropriate undergraduate college for degrees to
be conferred in December, 1978
- AUGUST 4, FRIDAY
Last day for dropping second term courses
- AUGUST 11, FRIDAY
Last day to withdraw from the University (second
summer term)
- AUGUST 11, FRIDAY
Final Examinations
- AUGUST 12, SATURDAY
Commencement

Extended Summer Term

- MAY 30, TUESDAY through
MAY 31, WEDNESDAY
Registration—For detailed dates and times see the
Bulletin (Schedule of Classes) for the summer
session, 1978
- JUNE 1, THURSDAY
Classes meet as scheduled
- JUNE 6, TUESDAY
Last day to add extended term courses
- JUNE 20, TUESDAY
Last day for removing spring semester "In-
complete" grades
- JULY 4, TUESDAY through
JULY 9, SUNDAY
Holiday—Independence Day and Mid-term break
- JULY 26, WEDNESDAY
Last day for making application to the dean of the
appropriate undergraduate college for degrees to
be conferred in December, 1978
- AUGUST 4, FRIDAY
Last day to drop extended term courses
- AUGUST 4, FRIDAY
Last day to withdraw from the University (extend-
ed term courses)
- AUGUST 11, FRIDAY
Final examinations
- AUGUST 12, SATURDAY
Commencement

1

General Information

Objectives of The Graduate School.

The Graduate School of Memphis State University is the center of advanced study and research within the University. The basic objectives of The Graduate School are (a) to preserve and disseminate knowledge now available in the humanities, the sciences, and the various professional areas represented by the various departmental graduate faculties; (b) to extend knowledge through basic research; and (c) to prepare men and women to assume a more responsible and useful role in society. Memphis State University offers equal educational opportunity to all persons without regard to race, sex, creed, color, or national origin.

Center For Instructional Service and Research

Purpose

The Center for Instructional Service and Research provides services in the areas of learning facilitation and instructional improvement for all departments of the university. These services are performed by three sub-centers described below, which are coordinated and directed by the Center for Instructional Service and Research. Practical experience and systematic study of services offered by the center are available to graduate students, who are planning careers in higher education, by means of a practicum conducted by the center.

Learning Media Center

The Learning Media Center provides a full array of media services, including film and cassette dissemination, use of educational technology equipment, and maintenance of such equipment. In addition, facilities are available for the use of media items within the center by faculty and students. Equipment for production of audio-visual materials for instructional use also is available.

Center For Learning Research and Service

The Center for Learning Research and Service provides services to faculty members who wish to initiate innovations or changes to facilitate learning or improve instruction. These services include consulting and assistance with development of instructional material, participation in evaluation of experimental programs, and dissemination of information concerning optimizing learning and instruction. Faculty participation in instructional improvement is encouraged by a program of small grants that provide both

resources and recognition for well conceived projects. An "experimental classroom," with educational technology equipment not generally available in other classrooms, may be scheduled by faculty members for one or more class meetings.

Instructional Television Center

An instructional television studio is available for use in courses offered by various departments of the university and in production of instructional material in the video mode. The studio has full color capability both within the studio and by means of portable equipment, outside of the studio.

Library Facilities.

The libraries of Memphis State University include the John Willard Brister Library and specialized collections in the Department of Chemistry, the Department of Mathematical Sciences, the Department of Music, the Herff College of Engineering, the School of Law, the Speech and Hearing Center, and the Bureau of Business and Economic Research. The total collection numbers more than 600,000 bound volumes and some 1,000,000 pieces of micromaterial.

The Brister Library contains a reference and bibliography section, an inter-library loan service, a map collection, the Mississippi Valley Collection (reflecting the history and culture of that region); it is also a depository for United States government documents, and Tennessee State documents. Private study carrels are available for assignment to faculty members and graduate students engaged in research.

The John W. Brister Library and the Library of the University of Tennessee Medical Units have agreed to a shared use of their respective collections by the students, faculties, and staffs of the two institutions.

Computer Facilities.

Computing support for the instructional program of the University and for faculty research is provided by Computer Services. The central computing system is a Xerox Sigma 9 computer which has 512K bytes of main storage and which supports both time-sharing and remote batch job entry. Remote batch job entry stations are located in the Herff College of Engineering, the College of Business Administration, the Administration Building, and the Mathematics and Foreign Language Building.

Auxiliary Facilities.

The *University Center* is located on the east side of the mall and was opened in 1968. It houses the University Bookstore and, in addition, provides a variety of food service, recreational, and conference facilities.

Chucalissa, prehistoric Indian town and museum situated in the southwest corner of Shelby County on Mitchell Road, is operated by the University as a research and training facility. Excavation of the site is being undertaken with students performing the archaeological field work under staff supervision. Adjoining acreage serves as a biological field station. Chucalissa also provides indoor and outdoor archaeological exhibits open to the public throughout the year.

The University has acquired 146 acres of land, formerly the *Kennedy Veterans' Hospital site* at Park and Getwell. This land is being developed for University facilities and programs.

The 623-acre *Meeman Forest Farm* was a gift to the University from the trustees of the Edward J. Meeman Foundation. The late Mr. Meeman was for 31 years editor of the *Memphis Press-Scimitar*.

Research and Service Activities.

In addition to individual faculty, student, and departmental programs of research and public service, the following organized units conduct public service and research activities.

Bureau of Business and Economic Research.

The Bureau of Business and Economic Research conducts research designed to contribute to economic and business knowledge. The primary emphasis of the Bureau effort is on Memphis, Tennessee, and the Mid-South. The Bureau has four specific functions:

1. To develop and disseminate data on current business and economic conditions.
2. To furnish to business concerns and governmental agencies special studies which will contribute to economic development.
3. To develop economic base studies for various counties and regions in an effort to help them plan the economic development of their area.

4. To train graduate students in business and economic research and to provide research facilities for faculty members.

The Bureau maintains the Mid-South Information Center. This Center contains approximately 20,000 books, censuses, periodicals, studies, and brochures, and has numerous files which contain statistical data provided by national, state, and local sources. In addition to regional economic data, there is also extensive information available on business, agriculture, labor, population, finance, government, and resources. There is a working arrangement between this Center and the main library of Memphis State University and books and other information available in the Cossitt-Goodwyn Technical Library of Memphis can be obtained on a loan arrangement.

Bureau of Educational Research and Services.

The Bureau of Educational Research and Services conducts research and development projects for educational agencies at local, state, and national levels. It serves in a coordinative and administrative role for educational studies, surveys, evaluations, consultant activities and other field services for the College of Education. Emphasis is placed on projects that have impact on the needs of West Tennessee and the Mid-South area and that are conducted through the cooperative efforts of faculty and students of the College of Education and other divisions of the University and educators in the local schools. All contract activities for the College of Education are channeled through the Bureau of Educational Research and Services where administrative support is provided. The primary thrust of the Bureau is service — to faculty, students, and outside educational agencies. Limited support is available for undergraduate and graduate students who desire work on funded research projects.

Center for Manpower Studies.

The objective of the Center for Manpower Studies in the College of Business Administration (a consortium between the University of Mississippi and Memphis State University) is to develop in students selecting the manpower speciality, the knowledge, skills, perspectives, and scholarly motivation to perform efficiently the functions of manpower planning, administration, and teaching. The Center staff also conducts research in manpower problems of regional and national scope. The program provides a unique inter-

disciplinary approach to the theory and practice of the development and utilization of human resources by combining a thorough grounding in the social sciences with the study of manpower utilization, manpower planning and policies, and labor market operations and the practical aspects of problem solving and "on-the-job" experience (internships).

Engineering Research Institute.

The Engineering Research Institute operates under the College of Engineering for the purpose of promoting research and service projects from all of the academic areas of the Engineering College. The Institute co-operates closely with other university research bureaus and departments to promote interdisciplinary projects. Particular emphasis is given to assist in the solution of problems affecting local industry and municipal and governmental agencies.

Institute of Governmental Studies and Research.

The Institute of Governmental Studies and Research in the Department of Political Science is located on the fourth floor of Clement Hall. It performs research and service for governmental agencies on matters of public policy and management. The institute publishes the PUBLIC AFFAIRS FORUM and places student interns with government agencies.

Psychology Clinic.

The Psychology Clinic is located on the first floor of the Psychology Building. It offers both psychological evaluations and therapeutic services to children and adults. For appointments or information, contact the Clinic.

Reading Center.

The Reading Center is a branch of the Curriculum and Instruction Department in the College of Education. It is located in room 123 of the Education Building. The Center provides diagnostic and remedial reading services to the community. It also serves as a graduate training facility for the College of Education. Individuals interested in the diagnostic and remedial reading services of the Reading Center should contact the director.

Regional Economic Development Center.

The Center represents the University in its

outreach function in the field of economic development planning. In providing technical and management assistance to the public and private sectors, the Center also serves as a laboratory for interdisciplinary research and service by faculty and graduate students in solving problems of urban and regional development. The Center's professional planning staff have academic appointments and teach courses in urban and regional planning.

Speech and Hearing Center.

Located at 807 Jefferson Avenue in the Medical Center of Memphis, this facility became affiliated with the University in 1967. It serves children and adults with speech and hearing defects. The University administers and operates the center in cooperation with the board of Memphis Speech and Hearing Center, Inc.

Public Service and Continuing Education.

The Office of Public Service and Continuing Education seeks to develop a working environment wherein faculty and staff creatively originate ideas and plans, interpret community needs and demands for service, and provide the resources and techniques to achieve such service. The Office is responsible for the coordination of degree-credit activities scheduled for evenings, weekends, and at residence centers in Metropolitan Memphis, Shelby County, and the West Tennessee region served by Memphis State University. The Office is also responsible for coordinating all non-credit or Continuing Education Unit (CEU) activities. These activities include workshops, conferences, institutes, and short courses. In addition, the Office coordinates applied research and provides consultation and advisory assistance to aid policy formulation by public and non-profit agencies.

Graduate courses are offered at centers where suitable arrangements are made in advance. Extensive graduate programs are available at centers in Jackson, Dyersburg, and other West Tennessee communities. Regularly employed graduate faculty members listed in this *Bulletin* teach graduate courses. The subject matter taught in these centers is the same as that offered on campus. Regulations regarding the approval of courses toward requirements for the Master's degree are found on page 34 of this *Bulletin*.

Admission To The Graduate School.

The Graduate School is open to persons holding the Bachelor's degree from colleges and universities recognized by standard, general or regional accrediting agencies, and whose undergraduate work has been of sufficient quality and scope to enable them to profitably pursue graduate study. Satisfactory scores are required on the Miller Analogies Test or the aptitude phase of the Graduate Record Examination for those students not holding the master's degree. Certain instructional programs of the Graduate School are subject to special admissions requirements which are in addition to the general admissions requirements. These programs necessitate special admissions requirements and are subject to change due to the availability of institutional resources. Students wishing to enter any graduate program of study should check with the appropriate department offering the program in order to become familiar with these special requirements. Students planning to major in any area of Business Administration must take the Graduate Management Admissions Test. The Departments of Biology and Psychology require the Graduate Record Examination score for admission. Applicants to the Department of Biology must also submit acceptable scores on the advanced phase of the Graduate Record Examination in the area of Biology. These tests may be taken in any institution approved to administer them. See the section on Graduate Programs for specific admissions requirements for the various degrees offered.

Admission to The Graduate School merely gives the privilege of taking course work. It does not in any way imply that the student is admitted to candidacy for an advanced degree.

Applications for admission to The Graduate School may be secured from the office of the Dean of The Graduate School; all inquiries should be addressed to that office. Students who wish to arrange for the Miller Analogies Test should call or write the Admission Testing Office (Administration Building). A \$7.00 fee, payable in the Business Office, is charged for the test. Registration packets for the Graduate Management Admissions Test are available in the Graduate Studies Office of the College of Business Administration, and Graduate Record Examination registration packets may be obtained from the Dean of The Graduate School. Students must register at least three weeks before the testing date.

Applicants for admission must have on file in the Graduate Office the following items to be considered for admission to the Graduate School: an application, entrance examination scores, and two official transcripts of their undergraduate and graduate credits. An application fee of \$5.00 is required at the time the application is submitted.

All credentials become the property of the University and cannot be forwarded or returned. Credentials will be maintained in active files for a 12 month period. After this period, credentials will be relegated to inactive status and must be submitted again before an admissions decision can be made.

Applicants may be required to present evidence of good health, moral character, and intellectual capacity necessary for pursuing graduate study. An applicant who is denied admission to the Graduate School may appeal the decision to the University Council for Graduate Studies and Research if he feels that the denial was discriminatory or without sufficient justification.

Foreign Students.

All foreign applicants whose native tongue is not English are required to take the Test of English as a Foreign Language (TOEFL) or equivalent as specified by The Graduate School. The student should write TOEFL, Educational Testing Service, Princeton, New Jersey 08540, U.S.A., requesting information and a registration form. In addition, it is strongly recommended that each applicant take the G.R.E. (Graduate Record Examination) three months before the proposed date of enrollment. Satisfactory scores on both the verbal and quantitative sections of the GRE are required for admission to a graduate program.

All students applying for graduate study in the College of Business are required to submit satisfactory scores on the GMAT (Graduate Management Admissions Test) in addition to the TOEFL. Each applicant should write ATGSB, Educational Testing Service, Box 966, Princeton, New Jersey 08540, U.S.A. for registration material. Official test score reports must be forwarded directly from the testing agencies to the Graduate School, Memphis State University, Memphis, Tennessee 38152.

In addition to these requirements for admission, every foreign student must provide sufficient evidence of financial support for himself and for the members of his family who will accompany him to Memphis.

Combination Student.

An undergraduate student at Memphis State University who is enrolled for courses which complete his undergraduate degree may apply for admission to begin graduate study and, in special cases, be allowed to register for graduate courses not to exceed a total of 15 semester hours of combined course work. (The student must meet all graduation requirements except for the number of hours and should have a 3.0 grade point average during his last year in school.) In the event he has failed a grade, he will be denied admission to The Graduate School as a combination student.

Individual Studies—M.A. and M.S.**Admission procedure:**

- (1) Student designs tentative program and places on file in Graduate Office.
- (2) Student has an interview with Graduate Dean.
- (3) Student admitted to Graduate School.
- (4) Approval of Committee member in college in which student plans major concentration.
- (5) Major advisor appointed by Committee members in college in which student plans major concentration.
- (6) Major advisor and student review program and recommend committee.
- (7) Program and committee approved by Graduate Dean and Graduate School Committee.

Advisory Committee:

- (1) Dr. Kenneth Cremer, Engineering Technology
 - (2) Dr. Paul Jones, Curriculum and Instruction
 - (3) Dr. H. Graden Kirksey, Chemistry
 - (4) Dr. Leonard Rosser, Management
- See page — for description of the program.

Graduate Provisional Student

A student who holds a bachelor's degree from an accredited college or university or who is currently enrolled in an accredited Graduate School, may be admitted as a provisional graduate student, subject to the following conditions:

- (1) The student must present evidence of a bachelor's degree from an accredited college or university, or substantiate current enrollment in an accredited graduate school.
- (2) The student may register for ONE SEMESTER only, and may take a MAXIMUM

of two courses as a Graduate Provisional Student (not to exceed eight semester hours credit).

- (3) The student will NOT be permitted to enter a degree program, but he must declare a major for advisory purposes.
- (4) The student will not be permitted to enroll for a second semester before presenting all credentials and meeting all requirements necessary for acceptance by the Graduate School and the department in which he seeks degree candidacy.

Readmission to the Graduate School.

Students who have previously attended The Graduate School and who have not attended for one or more semesters should apply for readmission. It is not necessary to apply for readmission if one fails to attend the summer session and was enrolled for the previous spring semester. Students who wish to apply for readmission should complete an application which is available in the Records Office, and return the completed application to that office.

Change of Major

Students who have previously declared major and collateral areas of study but desire to make a change should notify the Graduate Office in order that the records may be revised.

Adding, Dropping, or Changing Sections.

After a graduate student has completed his registration, changes cannot be made without approval of the appropriate university officials. The adjustment will originate with the major adviser, and the change-of-course must have the approval of the student's major adviser.

Student Grade Appeal Procedure.

This appeal procedure is designed to provide any undergraduate or graduate student at Memphis State University with a clearly defined avenue for appealing the assignment of a course grade which he or she believes was based on prejudice, discrimination, arbitrary or capricious action, or other reasons not related to academic performance. In all cases the complaining student shall have the burden of proof with respect to the allegations in his complaint and in his request for a hearing. If any party fails to pursue timely any step of the procedure, the disposition of the student's complaint made in the last previous

step shall be final. The procedure will be terminated at the level at which the instructor and the student are brought into agreement on the appealed grade. All correspondence and records will be retained in the office in which the complaint is finally resolved.

Step 1 The student shall first consult with the instructor in an effort to provide a satisfactory resolution of his complaint. In the event the student cannot schedule a meeting with the instructor, he may contact the department chairman who will schedule the meeting between the student and the instructor. The only exception to this procedure is the case where the instructor has been terminated by the University or is unavailable so that it is impossible to complete Step 1 within the allotted forty-five days. In this case the student may proceed directly to Step 2.

Step 2 If the complaint is not resolved in Step 1, the student may present his complaint in writing to the chairman of the department in which the course was offered within *forty-five* days from the end of the term during which the grade was received. The department chairman will attempt to resolve the complaint in consultation with the instructor and the student within a *fifteen-day* period dating from the formal presentation of the written complaint. The department chairman may, at his discretion, counsel with the faculty of the department.

If the department chairman was the instructor of the course involved in the complaint or if for any reason the chairman disqualifies himself, the written complaint of the student shall be submitted to the dean of the college.

The student's grade may be changed in Step 2 of the appeal procedure by the written consent of the instructor and the student.

Step 3 If the complaint cannot be resolved at the level of Step 2 within the prescribed fifteen-day time period, the student, within *five days* following the end of such period, may request in writing that the Chairman forward his complaint to the Dean. The Chairman must forward the student's complaint to the Dean within *five days*. The Chairman will provide the Dean with a copy of all correspondence and records pertaining to the complaint.

The Dean may utilize any resources available to his office to resolve the grade conflict within a *fifteen-day* period. The Dean's decision in this matter will be formally an-

nounced at a meeting of the Dean, the Chairman, the instructor, and the student. If the Dean and Chairman are in agreement that the grade should be changed, either raised or lowered, the Dean shall be empowered to change the grade without the Instructor's consent. Otherwise the grade shall remain as recorded.

Either the student or the instructor may appeal the decision made under Step 3 within *fifteen days* by filing a written request for a hearing before the University Grade Appeals Committee.* In the event of such an appeal the decision shall be stayed pending the completion of the procedure in Step 4. The Dean must be provided a copy of the hearing request.

Step 4 The written request for a hearing before the University Grade Appeals Committee should state the factual basis for the appeal of the Dean's decision. If the Committee finds the student's or the instructor's request merits a hearing, the Committee shall notify the student, the instructor, the Chairman and the Dean of the time and the location of the hearing. If the Committee finds that the request does not merit a hearing, the student or the instructor shall be so notified.

The University Grade Appeals Committee shall function as a review board. Based on its appeal review process, the committee shall make recommendations for action to the Vice President for Academic Affairs. The Vice President shall make the final decision. He may utilize any resources at his disposal to assist him in deciding the appeal. He shall have the power to allow the assigned grade to stand or to raise or lower the assigned grade. His decision must be formally announced to all parties and the committee. The time schedule allotted for completion of action by the committee and the Vice President shall be *fifteen days*.

*The University Grade Appeals Committee shall be composed of seven members and seven alternates constituted as follows:

If the matter involves a **graduate student**—A Chairman, designated by the Vice President for Academic Affairs and selected from the graduate faculty, a graduate faculty member and alternate designated by the Dean of the Graduate School, and two graduate faculty members and two alternates elected by the university Council for Graduate Studies and Research. Three students and three alternates selected through the Graduate Student Association.

The appeal procedures outlined do not apply to grades assigned by committees composed of three or more faculty members of the Graduate Faculty.

The Vice President for Academic Affairs shall make and publish rules of procedure for the filing and consideration of a request for hearing, the presentation of written and oral statements and evidence, the conduct of the hearing, and the issuance of its findings and determination.

Although the primary responsibility of the committee is to review appeals, the committee will report any obvious discriminatory or capricious conduct on the part of either the student or the instructor to the appropriate Vice President for his consideration and action.

Figure 1 is a flow diagram of the steps to be followed during the appeals procedure.

Withdrawing From Graduate School.

Failure to give official notice of complete withdrawal from Graduate School in writing will result in a grade of "F" in each course for which the student was registered.

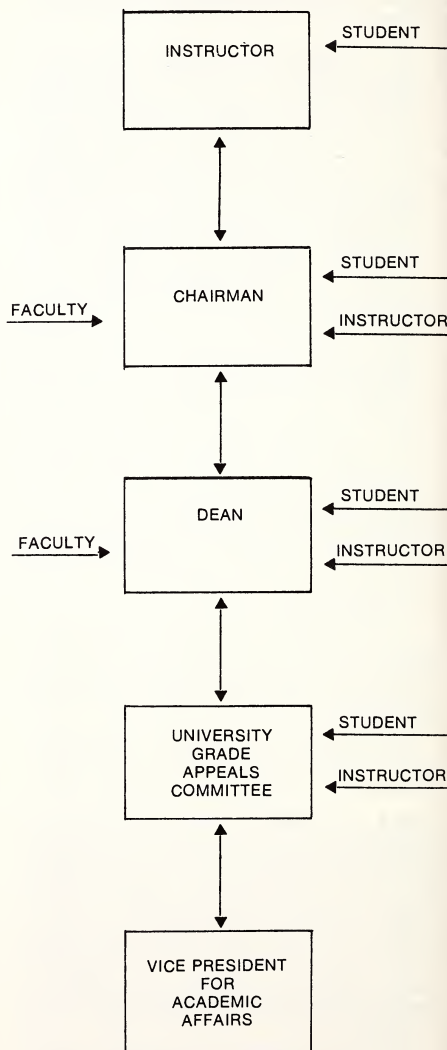
A withdrawal is permitted at any time before the "Last Day to Withdraw From the University" as indicated in the Calendar. Address your notice of withdrawal to:

DEAN, THE GRADUATE SCHOOL
Memphis State University
Memphis, Tennessee 38152

The student's Memphis State University identification card must be included with the notice of withdrawal. If a student withdraws with an unsatisfactory grade-point average, he must secure approval from the Graduate Dean for readmission. The adviser should examine the graduate transcript before granting approval for the withdrawal.

Figure 1.

Flow Diagram of the Appeals Procedure



2

Expenses and Aid

Expenses at University.

The matter of expense while attending the University is of importance to every student. It is difficult, however, to give specific information about yearly expenditures; expenses vary according to the nature of the curriculum, the place of residence (whether in Tennessee or in another state or country), and the student's own habits and needs. In any student body there are so many different tastes, as well as such a wide range of financial resources, that each student must determine his budget in keeping with his own needs and financial condition. It is possible to live simply, and to participate moderately in the life of the student community, on a modest budget. The best help the University authorities can offer the student in planning his budget is to inform him of certain definite expense items and to acquaint him with others for which he will in all probability have to provide.

The information in this section concerning tuition, fees, deposits, financial aid, etc. is applicable only to students enrolled in The Graduate School. Similar information for students in the undergraduate colleges and The School of Law is available in the bulletins of those colleges.

The listing of any fee or incidental charge in this bulletin does not constitute a contract between the University and the student. Because of rapidly changing conditions it may become necessary to alter a fee structure before the next edition of the *Bulletin* is published. As a condition of registration each student will pay the fees in effect at the time he registers.

Application Fee.

Each student submitting an application for admission to the Graduate School must pay, at the time he submits his application, a non-refundable fee of \$5.00.

Maintenance Fee.

All students who are residents of Tennessee pay a maintenance fee of \$21.00 per semester hour, not to exceed a maximum of \$224.00. Non-residents pay this same maintenance fee in addition to the tuition indicated in the following paragraph. Fees for audits will be assessed on the same basis as fees for credit. Students who have paid the maximum maintenance, plus the maximum tuition when applicable, are entitled to certain health services, admission to home athletic events, concerts, plays, social and

other student-sponsored activities, and a subscription to the student newspaper, *The Helmsman*.

Tuition.

No charge is made for tuition to bona-fide residents of the State of Tennessee. Non-residents are charged tuition of \$36.00 per semester hour, not to exceed a maximum of \$420.00. Tuition is in addition to the maintenance fee.

Residency Classification.

The Office of Admissions and Records is charged with the responsibility of assigning a residency classification to each student using regulations provided by the Board of Regents. The student may appeal the decision to the Committee on Residency. Residency regulations of the Board of Regents and information on appeals procedures are available in the Office of Admissions and Records.

The Summer Session.

The Summer Session consists of two separate terms of approximately six weeks each, plus an extended term for specified courses (see the calendar for specific dates). There is also a Pre-Summer term of three weeks with a limited number of courses offered. Charges for all of the above terms are assessed according to the number of hours for which the student registers. The current rate is \$21.00 per semester hour for students classified as residents, and \$57.00 per semester hour for students classified as non-residents for payment of fees.

Summer School Course Load Limitations.

The maximum number of hours for which a graduate student may enroll during the Summer Session is 12. These 12 hours may be earned in one of several options: (1) 6 hours in each of the Six-week terms, (2) 12 hours taken in the Extended term with no work taken during the Six-week terms, or (3) a maximum of 4 hours in the Extended term and 4 hours in each of the Six-week terms. This load limitation is exclusive of the Pre-Summer Session. The maximum course load for the Pre-Summer Session will be one three- or four-hour course.

Fee Refunds.

If a student withdraws from the University within seven days from the beginning of

classes for the fall and spring terms, a refund will be made of 80% of his maintenance fee and tuition or music fee (if any). Each week thereafter, the amount will be reduced 20%. *All other fees are non-refundable.*

For The Summer Session a refund of 80% of the maintenance fee and tuition or music fee (if any) is made if the student withdraws from the University within three school days from the beginning of classes. Each three school days thereafter, the amount will be reduced 20%. *All other fees are non-refundable.*

Residence Halls

Charges for rooms in University residence halls are indicated below. For information concerning application for rooms, contact the Office of University Housing.

Residence Halls	Per Sem.	Per Six Week Summer Term	Per Five Week Summer Term	Per Eleven Week Extended Summer Term
Browning Hall‡	165	62	52	114
Browning Hall†	200	75	63	138
Hayden Hall ‡	165	62	52	114
Hayden Hall†	200	75	63	138
McCord Hall‡	165	62	52	114
McCord Hall†	200	75	63	138
*Rawls Hall‡	205	77	64	141
*Rawls Hall†	240	90	75	165
*Richardson Towers‡	260	98	82	180
*Richardson Towers†	300	113	94	207
*Robison Hall‡	205	77	64	141
*Robison Hall †	240	90	75	165
*637 Normal‡	260	98	82	180
*637 Normal†	300	113	94	207
*612 Goodman‡	260	98	82	180
*612 Goodman†	300	113	94	207
Smith Hall‡	180	68	57	125
Smith Hall†	215	81	68	149
West Hall‡	180	68	57	125
West Hall†	215	81	68	149

*Air Conditioned ‡Double Room †Single Room

(All room charges are subject to change without notice.)

(All rates include telephone and post office box, but NOT long distance telephone bills.)

The following policy covers residence hall contracts, deposits, and rental fees:

1. All residence hall contracts are for the academic year or for the entire summer session.

2. Each application for residence hall accommodations must be accompanied by a deposit of \$50.00. This deposit shall remain on file with the University throughout the occupancy of housing facilities, and is reduced by the amount of any unpaid damages or any other financial obligation due

the University at the time residence hall space is vacated.

3. An initial residence hall reservation request must be confirmed by a properly negotiated contract with deposit.

4. Students who wish to retain their room and hall priority for subsequent semesters must notify the Housing Office in writing by July 1 for the fall semester, by December 1 for the spring semester, and by May 1 for summer sessions.

5. A housing contract can be cancelled and a refund of the \$50.00 deposit made only if the Housing Office receives a signed cancellation request on or before:

July 1 for contracts effective for the fall semester

December 1 for contracts effective for the spring semester

May 1 for contracts effective for the summer session or any portion thereof.

After these dates full refund of the \$50.00 deposit will be made only for the following reasons:

A. A student is denied admittance or readmittance to the University.

B. A student is prevented from entering the University because of medical reasons confirmed in writing by a licensed physician or the University Health Service.

C. Residence Hall space is not available.

Students failing to cancel their contracts by the dates listed in paragraph 5 above or for the reasons specified in (A), (B) or (C) will receive a refund of \$30.00. Students who fail to claim an assigned room or who fail to notify the Housing Office in writing of their intention to cancel by the announced ending of a check-in period will automatically forfeit the \$50.00 deposit regardless of the reason such assignment was unclaimed.

6. Refunds of residence hall rent after classes begin will be prorated on a weekly calendar basis only when the student is forced to withdraw from the residence hall because of medical reasons, such reasons being supported by a written statement from a licensed physician or the University Health Service.

7. Students assigned as sole occupants of double rooms in order to satisfy their requests for a single room will be assessed the single room fee.

8. Residence hall rental fees for the second summer term that are paid at the be-

ginning of the summer session will be refunded to students who withdraw from the University before second term classes begin.

Married Housing.

The University has 126 apartments for married students located on South Campus approximately one mile from the central part of the campus. These are 70 two-bedroom and 56 one-bedroom apartments. Some apartments are built specifically for paraplegic students. All apartments are furnished with electric stove, refrigerator, carpeting and garbage disposers.

The monthly rental rates are: one bedroom apartment — \$120.00; two bedroom apartment — \$145.00. Electrical utilities are paid by tenant.

Application forms may be obtained from the University Housing Office in Room 105, Scates Hall, Main Campus. A \$5.00 application fee is required when the application is submitted. A \$50.00 deposit is required upon acceptance of assigned apartment.

Meals.

The University Cafeterias, Student Center, and Vending Areas, open to all students, provide wholesome food at reasonable prices. The cost of meals per student is estimated at \$4.00 to \$4.75 per day.

Late Registration.

Students who do not complete registration (including the payment of fees) during the official registration period will be charged \$5.00 for the first day after the official registration period and \$1.00 per day thereafter.

Adding and Dropping Courses.

A charge of \$3.00 per course will be made for each course which is added or dropped after the student has completed registration.

Transcripts.

One transcript of the student's academic record at Memphis State University is furnished free; a charge of \$1.00 is made for each additional copy requested. Transcripts are issued only at the request of the student or his authorized agent. Requests for transcripts should be filed with the Records Office. No transcript will be provided for a student who has any financial indebtedness to the University.

Automobile Registration.

Each person who expects to operate and park an automobile on the campus must register it in the security office (Administration Building) and pay \$5.00 for an official permit, valid from September through August. Proof of ownership must be presented when registering the automobile.

Identification Cards.

The University issues to each student an identification card, including his photograph, personal description, and certificate that he is enrolled as a student in the University. The card is required for registration, the borrowing of library books, the cashing of personal checks, and other purposes. *The card remains the property of Memphis State University and will be surrendered upon request of a university official.* A charge of \$10.00 will be required for its replacement. A student will be charged \$2.00 to make any change in data on his card.

Part-time students who are enrolled for at least six semester hours of credit courses will be given full-time I.D. card validation.

Returned Checks

It is expected that a check given the University, for any reason, will clear the bank on which it is drawn. If a check is returned, the fee is assumed to be unpaid and charges for late payment will be assessed. A \$4.00 service charge will be assessed for each returned check given in payment of any fee except registration (maintenance and/or tuition), or cashed by the University for the convenience of the student. Check cashing privileges will be revoked for any student who has had checks returned by his bank more than once.

Laboratory Deposits.

Certain courses in chemistry and physics require breakage deposits, any unused portion of which is refunded.

Graduate School Foreign Language Test.

The fee for the administration of the Graduate School Foreign Language Test is \$12.00.

Courses in Applied Music.

The fee for applied music shall be \$25 per semester for each one-half hour lesson.

Music Locker Deposit.

Music students are required to have a locker for storage of University owned musical instruments or equipment. Personal instruments may also be stored in lockers. A deposit of \$3.00 for one semester or \$4.00 for two semesters is required on each locker issued. This deposit less a service charge of \$1.50 per semester, will be refunded upon return of the lock. Students will be expected to pay for any damages.

Additional Charges.

The University reserves the right to increase the charges listed herein or to add new ones whenever such increases or additions are found to be necessary.

Thesis.

The student will be required to present a receipt from the Business Office to the Graduate Office showing that he has paid a fee of \$4.00 for each copy of his thesis which is to be bound. A minimum of three copies are required, and the student should consult with the department chairman and/or thesis advisor as to the number of additional copies required. A copy for the student is not included in these three.

Dissertation.

A student completing the doctorate will be required to pay the \$4.00 fee for binding each copy of his dissertation and in addition a fee of \$35.00 to defray the cost of micro-filming the dissertation and publishing the abstract. A minimum of three copies are required, and the student should consult with

the department chairman and/or dissertation advisor as to the number of additional copies required. A copy for the student is not included in these three.

Graduation Fee.

Each candidate for a degree from Memphis State University pays a \$15.00 fee to cover cost of the diploma, rental of cap and gown, and incidentals connected with the commencement exercises. This fee must be paid thirty days before graduation.

Graduate Assistantships.

MASTER'S LEVEL ASSISTANTSHIPS. Graduate assistantships for Master's degree students are available in most of the academic areas at Memphis State University. Full-time assistants may anticipate from \$200 to \$250 per month salary and remission of registration fees.

DOCTORAL ASSISTANTSHIPS AND FELLOWSHIPS. Numerous opportunities are available for qualified students to participate in N.D.E.A., N.S.F., N.I.H., Industrial and Private Foundation Awards made to the University. Inquiries should be made to either the Departmental Chairman or Director of Graduate Studies of the appropriate department.

RESIDENT HALL ASSISTANTS. Head residents have the responsibility for a residence hall; apartments and salaries are negotiated. Resident advisers have hall responsibilities and receive room and \$100.00 per month. Inquiries should be sent to the Director of Housing.



3

Graduate Programs

Graduate Programs.

A wide variety of graduate programs of study are offered in The Graduate School of Memphis State University. Candidates for a degree must design a plan which has the approval of their major adviser, the departmental chairman, and the Graduate Dean.

Memphis State University offers Master's degrees, Education Specialist degrees, and Doctoral degrees. The Master's programs are: Master of Arts (M.A.), Master of Arts in Teaching (M.A.T.), Master of Business Administration (M.B.A.), Master of City and Regional Planning (M.C.R.P.), Master of Education (M.Ed.), Master of Fine Arts (M.F.A.) Master of Music (M.M.), Master of Public Administration (M.P.A.), Master of Science (M.S.). In the area of Education, the degrees of Education Specialist (Ed.S.) and Doctor of Education (Ed.D.) are offered. The Doctor of

Philosophy (Ph.D.) is awarded in Audiology and Speech Pathology, Biology, Chemistry, History, Mathematics, and Psychology.

Every graduate student is expected to comply with the general requirements for the degree he is pursuing as outlined elsewhere in the *Graduate School Bulletin and Policies of the Graduate School*. Copies of both publication are available in the departmental offices. In addition to the general requirements, the student will be expected to conform to the requirements of one of the departments of the University. The choice of the department in which the student is to major may, in large part, determine the degree he will seek, since the graduate degree should reflect the type of program the student has followed.

Following is an outline of the academic programs offered in The Graduate School.

ACADEMIC PROGRAMS**MASTER'S DEGREE**

Department	Major	Concentrations Within Major (Possible)	Degree Offered
Accountancy	Accountancy		Master of Science
	Business Administration	Accountancy	Master of Business Administration
Art	Studio Art	(1) Painting (2) Sculpture (3) Printmaking (4) Graphic Design (5) Interior Design	Master of Fine Arts
	Art	(6) Art History	Master of Arts
		(7) Art Education	Master of Arts in Teaching
Audiology and Speech Pathology	Audiology and Speech Pathology	(1) Audiology (2) Speech Pathology	Master of Arts
Biology	Biology	(1) Botany (2) Cell Biology (3) Invertebrate Zoology (4) Microbiology (5) Vertebrate Zoology	Master of Science
Chemistry	Chemistry	(1) Inorganic (2) Analytical Chemistry (3) Organic (4) Physical Chemistry (5) Biochemistry	Master of Science
Civil Engineering	Civil Engineering	(1) Environmental Engineering (2) Foundation Engineering (3) Structural Engineering (4) Transportation Engineering	Master of Science

ACADEMIC PROGRAMS

MASTER'S DEGREE

Department	Major	Concentrations Within Major (Possible)	Degree Offered
Departments of the College of Business Administration	Business Administration	(1) Accountancy (2) Finance, Insurance, Real Estate (3) Management (4) Marketing (5) Economics	Master of Business Administraction
Distributive Education	Distributive Education		Master of Education
Economics	Economics		Master of Arts
	Business Administration	Economics	Master of Business Administration
Educational Administraction and Supervision	Educational Administration and Supervision	(1) General (2) Elementary (3) Secondary	Master of Education
	Adult Education		Master of Education
Electrical Engineering	Electrical Engineering	(1) Solid State Electronics (2) Automatic Control Systems (3) Engineering Computer Systems (4) Microwave & Antenna Systems	Master of Science
Curriculum and Instruction	Elementary Education	No Concentration or (1) Early Childhood Education	Master of Education
	Reading		Master of Education
	Secondary Education		Master of Education Master of Arts in Teaching
English	English		Master of Arts
Finance, Insurance, Real Estate	Finance		Master of Science
	Business Administration	Finance, Insurance, Real Estate	Master of Business Administration
Foreign Language	French		Master of Arts
	Spanish		Master of Arts
Geography	Geography		Master of Arts Master of Science
Geology	Geology		Master of Science
Guidance and Personnel Services	Guidance and Personnel Services	(1) Elementary School Counseling & Guidance (2) Secondary School Counseling & Guidance (3) General Counseling & Guidance	Master of Education
Health, Physical Education & Recreation	Health, Physical Education & Recreation	(1) Health (2) Physical Education (3) Recreation	Master of Education
Hlstory	History		Master of Arts

Department	Major	Concentrations Within Major (Possible)	Degree Offered
Interdepartmental Programs	Natural Science		Master of Science
Interdepartmental Programs	Industrial Systems Analysis		Master of Science
Interdisciplinary Programs	Individual Studies		Master of Arts Master of Science
Library Service	Library Service		Master of Education
Management	Management		Master of Science
	Business Administration	Management	Master of Business Administration
Marketing	Marketing		Master of Science
	Business Administration	Marketing	Master of Business Administration
Mathematical Sciences	Mathematics	(1) General Mathematics (2) Statistics (3) Computer Sciences	Master of Science
Mechanical Engineering	Mechanical Engineering	(1) Design & Manufacturing (2) Nuclear & Thermal Power (3) Materials Science (4) Fluid & Solid Mechanics (5) Aerospace Propulsion	Master of Science
Music	Music	(1) Applied Music (a) Composition (b) Piano (c) Vocal Pedagogy (d) Vocal Performance (e) Organ (f) Strings (g) Brasses (h) Winds (i) Percussion (2) Sacred Music (3) Music Theory (4) Music History (5) Opera and Conducting (6) Opera Production and Directing	Master of Music
		(7) Musical Arts: Music History (8) Musical Arts: Applied Music	Master of Arts
	Music Education		Master of Music Education
Office Administration	Business Education and Office Management	(1) Business Education	Master of Education
Philosophy	Philosophy		Master of Arts
Physics	Physics		Master of Science
Planning	City and Regional Planning	(1) Developmental Planning (2) Comprehensive Physical Planning (3) Natural and Environmental Resources Planning	Master of City and Regional Planning

ACADEMIC PROGRAMS**MASTER'S DEGREE**

Department	Major	Concentrations Within Major (Possible)	Degree Offered
Political Science	Political Science		Master of Arts
	Public Administration	(1) Urban Management and Planning (2) Comparative and Development Administration (3) General (4) Health Services Administration	Master in Public Administration
Psychology	General Psychology	(1) General Psychology (2) Clinical Psychology	Master of Arts Master of Science
	School Psychology		Master of Arts
Sociology	Sociology		Master of Arts
Special Education and Rehabilitation	Special Education and Rehabilitation	(1) Educationally Handicapping Conditions (2) Pre-School Education of Exceptional Children (3) Multihandicapped (4) Vocational Rehabilitation	Master of Education
Speech and Drama	Speech and Drama	(1) Radio-TV-Film (2) Rhetoric and Communication Arts (3) Theatre & Oral Interpretation	Master of Arts
	Theatre		Master of Fine Arts
Engineering Technology	Technical Education	(1) Architectural (2) Construction (3) Drafting & Design (4) Electronics (5) Manufacturing (6) Industrial Arts	Master of Science

ACADEMIC PROGRAMS**ADVANCED DEGREES**

Department	Major	Concentrations Within Major (Possible)	Degree Offered
Audiology and Speech Pathology	Audiology and Speech Pathology	(1) Audiology (2) Speech Pathology	Doctor of Philosophy
Biology	Biology	(1) Botany (2) Cell Biology (3) Invertebrate Zoology (4) Microbiology (5) Vertebrate Zoology	Doctor of Philosophy
Chemistry	Chemistry	(1) Inorganic (2) Organic (3) Physical Chemistry (4) Analytical Chemistry (5) Biochemistry	Doctor of Philosophy

ACADEMIC PROGRAMS

MASTER'S DEGREE

Department	Major	Concentrations Within Major (Possible)	Degree Offered
Educational Administration & Supervision	Educational Administration & Supervision	(1) Superintendency (2) Elementary (3) Secondary	Education Specialist
		(4) Higher Education	Education Specialist Doctor of Education
		No Concentration	Doctor of Education
Guidance and Personnel Services	Personnel Services	(1) Counseling & Guidance	Education Specialist
		(2) Student Personnel Services	Doctor of Education
History	History		Doctor of Philosophy
Interdepartmental Programs (Education)	Curriculum and Instruction	No Concentration or (1) Elem. Ed. (2) Reading (3) Sec. Ed. (4) Higher Ed. (5) English Ed. (6) Music Ed. (7) Science Ed. (8) Bus. Ed. (9) Social Studies Education (10) Mathematics Education (11) Special Education and Rehabilitation (12) Cultural Foundations (13) Educational Psychology (14) Research Method- ology and Statistics	Education Specialist Doctor of Education
Mathematical Sciences	Mathematics	(1) College Teaching	Doctor of Philosophy
Psychology	Psychology	(1) Clinical Psychology (a) Neuropsychology (b) Behavior Management (2) Experimental Psychology (a) Biopsychology (b) Learning Behavior Analysis (c) Sensory Processes (d) Neuropsychology (e) Behavior Management (3) Human Psychology (a) Human Develop- mental Retardation (b) Industrial Psychology (c) Personality- Cognitive Processes (d) Social Psychology (e) Neuropsychology (f) Behavior Management	Doctor of Philosophy

Master's Degree.

The program for the **MASTER OF ARTS** degree is generally open to those who have completed the Bachelor of Arts degree. Others may enroll for the M.A. degree if undergraduate prerequisites are met. Departmental requirements with reference to thesis, language, and course requirements are outlined on pages 41-157 of the *Bulletin*. Students majoring in the following areas are generally expected to seek the Master of Arts degree: Art History, Audiology and Speech Pathology, English, Geography, History, Modern Languages, Music (Applied), Music History, Music Theory, Philosophy, Political Science, Psychology, Sociology, and Speech and Drama. Economics majors may choose to apply for this degree also.

The program for the **MASTER OF ARTS** and **MASTER OF SCIENCE IN INDIVIDUAL STUDIES** degree is designed to serve those students who have a specific educational goal and who wish to organize a program of existing courses with a concentration area, theme or special emphasis which is not found among current majors. In order to qualify as an Individual Studies major, the degree plan must differ significantly from the requirements for an existing major. (If the plan does not differ by at least nine hours from the hours in existing major, the student will be advised to enter the program of the existing major.) The plan must contain a minimum total of 33 semester hours, of which at least 18 must be at the 7000 level or above. The inclusion of a thesis, performance project, or independent project may be determined by the student and his program advisory committee. See page 14 for admission requirements for the program and advisory information.

The programs for the **MASTER OF ARTS IN TEACHING** degree are designed for a selected group of students who offer outstanding undergraduate academic records.

The degree is awarded in the Department of Curriculum and Instruction.

A. FOR STUDENTS SEEKING CERTIFICATION: Candidates for the Master of Arts in Teaching degree who have not completed the student teaching experience at the undergraduate level will be required to do so at the graduate level. These candidates should refer to the Undergraduate Catalog requirements and procedures for student teaching, and confer with the Director of Certification concerning individual program requirements.

B. FOR STUDENTS ALREADY CERTIFIED:

In the event the student wishes to change his teaching field from his undergraduate major he will be required to meet the departmental prerequisites and teaching certification requirements. The student may prepare in more than one discipline if he is seeking a teaching endorsement in more than one field. Students may seek certification in any graduate area for which there is an undergraduate endorsement.

The maximum combined credit in "Special Problems" and "Workshop" courses that can be applied to the degree is 10 semester hours with not more than 6 semester hours applying to the major.

- a. Under this policy, the statement concerning the application of credit in "problems courses" towards Master's degree requirements that appears in this bulletin under the heading — **AMOUNT OF WORK PERMITTED** — would remain in effect as follows: Seven semester hours of credit in "Problems" courses may be applied to Master's degree requirements (4 hrs. to the major area and 3 hrs. to the collateral area or 3 hrs. to the major area and 4 hrs. to the collateral area).
- b. If the student should elect to take the maximum credit allowed in "Special Problems" courses, he could take an additional 3 hrs. in "Workshop" courses to be applied to degree requirements.
- c. If the student should elect to take "Workshop" courses and no "Special Problems" courses, he could acquire 10 semester hours for degree purposes, only 6 hrs. of which could apply to major.

The Master of Arts in Teaching degree may be earned without the presentation of a thesis. No provision is made for thesis credit within the total hours required for the degree.

For a more detailed description of the program see the Department of Curriculum and Instruction program description.

There is also a **MASTER OF ARTS IN TEACHING** offered through the Department of Art. Most of the requirements are the same as offered through the Department of Curriculum and Instruction. For the exceptions see page 45.

Students who wish to pursue the **MASTER OF BUSINESS ADMINISTRATION** degree or the **MASTER OF SCIENCE** degree (with a major in Accounting, Finance, Management,

or Marketing) must have completed or complete satisfactorily the proper background courses. Except for the MASTER OF ARTS degree in Economics (see page 114) or the MASTER OF EDUCATION degree (major in Business Education and Office Management, see page 100), CORE I below lists the courses required for background. Students deficient in background courses must remove the CORE I deficiencies and any Departmental deficiency requirements. It is strongly recommended that such students make an appointment with the Director of Graduate Studies, College of Business Administration, for individual counseling — particularly to select the specific department which will be the student's "area of concentration."

CORE I	CREDITS
Fundamentals of Accounting (2010 and 2020)	6
Principles of Economics (2110 and 2120)	6
Basic Marketing (3010)	3
Business Finance (3410)	3
Business Statistics (3710 and 3711)	6
Business Law (3011)	3
Organization and Management (3110) ..	3
Data Processing Systems (2750)	3
TOTAL	33

If the prospective graduate student does not have an undergraduate degree in Business, but meets the entrance requirements for the graduate school given below, he may complete the required background courses with the 24 credits of the ALTERNATE CORE I:

ALTERNATE CORE I	CREDITS
Fundamentals of Accounting (7001)	3
Proseminar in Economics I (7010)	3
Basic Marketing (7001)	3
Business Finance (7010)	3
Survey of Statistical Methods in Business and Economics (7011)	3
Business Environment and the Law (7011)	3
Advanced Organization and Manage- ment (7000)	3
Data Processing Systems (7050)	3
TOTAL	24

Admission to a degree program is granted to graduates of accredited colleges and universities who show high promise of success in graduate business study. Criteria used for admission include the candidate's:

- Performance on the Graduate Management Admission Test (GMAT);* (The test must be taken prior to admission to the graduate program.)
- Undergraduate grade averages and the trend of the grades during undergraduate work;
- Rank in his collegiate graduating class;
- Letters of reference and recommendation.

Arrangements for taking the GMAT can be made by writing to GMAT, Educational Testing Service, Princeton, New Jersey 08540. Packets are also available in the Graduate School Office at Memphis State University, and in the Director of Graduate Studies Office, College of Business Administration, Memphis State University.

Qualified candidates may enter the program at the beginning of any semester. To assure proper evaluation, application credentials should be received at least 60 days prior to the beginning of the semester in which the candidate wishes to enroll.

The Master of Business Administration program is specifically designed for students who have earned the Bachelor's Degree from Arts and Sciences, Engineering, Law, or other areas of study, as well as those who hold a Bachelor's Degree in Business Administration who desire to change their area of concentration. Students with adequate preparation in Business Administration and Economics may complete the program in a minimum of three semesters (one calendar year). A period of five semesters is normally required of students who have no undergraduate work in business. The graduate programs of the College of Business Administration are fully accredited by the American Assembly of Collegiate Schools of Business.

Each candidate for an M.B.A. degree must complete a minimum of 33 semester hours of course work and pass a written and/or oral examination. The 33 graduate credits comprising the M.B.A. program (Core II) are distributed as follows:

*In the case of students whose native language is not English, performance on the Test of English as a Foreign Language (TOEFL) is required in addition to the GMAT.

CORE II	CREDITS
<i>Required Courses</i>	
Economics 7020	
Pro-Seminar II	3
Management 7420	
Quantitative Methods for Business	
Decisions	3
Accounting 7010	
Cases and Problems in Decision	
Making	3
FIR 7610	
Analysis and Control of Business	3
Marketing 7012	
Marketing Structure and	
Administration	3
Management 7410	
Seminar and Business Policy	3
And one of the following:	
Marketing 7015	
Research Methodology	3
Economics 7140	
Business and Economic Research ..	3
Business Education 7530	
Executive Communications	3
TOTAL	21

Area of Concentration and Electives: Courses in the areas of concentration are selected from the areas of graduate study listed above. These courses must be approved by the student's adviser.

	12
CORE II TOTAL	33

At least 24 of the 33 hours required must be in courses designated for graduate students (7000 level or above).

Master of Arts and Master of Science: The Master of Arts degree program is offered in the area of economics and Master of Science degree programs are available in accountancy, finance, marketing, and management. Descriptions of these programs are found in the appropriate departmental section.

The program for the **MASTER OF CITY AND REGIONAL PLANNING** requires 60 semester hours, 6 of which may be thesis research. Students can be admitted from all undergraduate disciplines and professions with a minimum of two years required to complete the program. The MCRP program trains students for professional planning practice in three areas of concentration: Developmental Planning, Physical Planning, and Natural and Environmental Resources Planning.

The program for the **MASTER OF EDUCATION** degree is open to those who have completed the requirements for teacher certification. However, programs for non-certificated personnel are offered by the departments of Educational Administration and Supervision; Curriculum and Instruction; Guidance and Personnel Services; Health, Physical Education and Recreation; and Special Education and Rehabilitation.

The maximum combined credit in "Special Problems" and "Workshop" courses that can be applied to the degree is 10 semester hours with not more than 6 semester hours applying to the major.

- Under this policy, the statement concerning the application of credit in "problems courses" toward Master's degree requirements that appears in this bulletin under the heading — **AMOUNT OF WORK PERMITTED** — would remain in effect as follows: Seven semester hours of credit in "Problems" courses may be applied to Master's degree requirements (4 hrs. to the major area and 3 hrs. to the collateral area or 3 hrs. to the major area and 4 hrs. to the collateral area).
- If the student should elect to take the maximum credit allowed in "Special Problems" courses, he could take an additional 3 hrs. in "Workshop" courses to be applied to degree requirements.
- If the student should elect to take "Workshop" courses and no "Special Problems" courses, he could acquire 10 semester hours for degree purposes, only 6 hrs. of which could apply to the major.

Departmental requirements with reference to thesis, research and course requirements are found under the appropriate departmental section in this *Bulletin*.

The Master of Education Degree is offered with the following majors:

(Areas of concentration within the major are in parentheses.)

M.Ed.—Adult Education

M.Ed.—Business Education and Office Management

M.Ed.—Distributive Education

M.Ed.—Educational Administration and Supervision (General)

Educational Administration and Supervision (Elementary)

Educational Administration and Supervision (Secondary)

- M.Ed.—Elementary Education
Elementary Education (Early Childhood)
- M.Ed.—Guidance and Personnel Services
(Elementary School Counseling and Guidance)
Guidance and Personnel Services
(Secondary School Counseling and Guidance)
Guidance and Personnel Services
(General Counseling and Guidance)
- M.Ed.—Health, Physical Education and Recreation (Health)
Health, Physical Education and Recreation (Physical Education)
Health, Physical Education and Recreation (Recreation)
- M.Ed.—Library Service
- M.Ed.—Reading
- M.Ed.—Secondary Education
- M.Ed.—Special Education and Rehabilitation
(Educationally Handicapping Conditions)
Special Education and Rehabilitation
(Pre-School Education of Exceptional Children)
Special Education and Rehabilitation
(Multihandicapped)
Special Education and Rehabilitation
(Vocational Rehabilitation)

The program for the **MASTER OF FINE ARTS** in Art is designed to train students for professions in the practicing arts and the teaching of studio areas at the college level. Specific requirements for admission and candidacy are specified on page 45 of this *Bulletin*.

The program for the **MASTER OF FINE ARTS** in Theatre is generally open to students with considerable background in educational or professional theatre, and who intend to pursue careers in a production capacity in academic, community, regional, or professional theatres. Students will concentrate either in performance (directing and acting) or production (design and technical theatre). Specific requirements for admission and candidacy are specified on page 153 in the *Bulletin*.

The program for the **MASTER OF MUSIC** degree is generally open to students specializing in one of the following areas: Applied Music, Music Theory, Music History, Opera and Conducting, Opera Production and Directing, and Sacred Music. This degree is designed for those who have completed the Bachelor of Music degree in one of the above specified areas.

The program for the **MASTER OF PUBLIC ADMINISTRATION** degree is generally open to students with preparation in the social sciences or in business courses. Students working toward this interdisciplinary degree complete a core curriculum in public administration courses and a concentration in one of the following areas: General Public Administration, Health Services Administration, Urban Management and Planning, or Comparative and Development Administration.

The program for the **MASTER OF SCIENCE** degree is generally open to students with a science background. Departmental requirements with reference to thesis, language, and course requirements are outlined on pages 41 to 157 in the *Bulletin*. Those who are majoring in the following areas may seek the Master of Science degree: Biology, Chemistry, Civil Engineering, Electrical Engineering, Mechanical Engineering, Geography, Geology, Industrial Systems Analysis, Mathematical Sciences, Physics, Psychology, and Technical Education. Students majoring in Accountancy, Business Finance, Marketing, and Management may also apply for the Master of Science Degree Program.

The program for the **INTERDISCIPLINARY MASTER OF SCIENCE** degree is a non-thesis degree designed to prepare students for a significant role in meeting changing social needs for governmental, industrial, and teaching personnel having both depth and breadth in natural science and/or mathematics. Nominal majors may include courses in biology, chemistry, geography, geology, physics, and mathematics. A minimum of 33 semester hours is required for the degree with at least 24 semester hours in the nominal majors of either A) natural sciences; or, B) mathematics. A collateral area of 9 semester hours may be elected in business, education, government, engineering, or other approved areas.

Under option A the nominal major may include a minimum of 9 semester hours in a particular science (e.g., chemistry), 6 semester hours in a secondary science (e.g., physics), and 3 semester hours in a third area of science. Any student who has not completed 6 semester hours in mathematics above the equivalent of the 1000 level is required to do so. If a student under option A has completed the mathematics requirement, he may either select the remainder of his 24 semester hours at the 6000 level or above in mathematics or complete the 24-hours requirement in some science and/or mathematics. Under the mathematics option stu-

dents will undertake a course of 24 hours of mathematics to be determined by the student and his advisory committee.

General Requirements for Graduate Degrees

Every graduate student and every prospective graduate student is expected to make himself thoroughly familiar with the regulations of The Graduate School and the requirements for degrees. Failure to follow the regulations and requirements usually results in complications for which The Graduate School cannot assume responsibility.

Master's Degree.

The Master's degree program shall include 30-33 semester hours of course work as follows. (Additional requirements for the Master of Fine Arts in Theatre and the Master of City and Regional Planning can be found in the description of the programs.) The student's program must be approved by the major department. In some cases, 18-24 semester hours are required in a major area and 8-12 semester hours in a collateral area.

A thesis of 3 to 6 semester hours may be presented as partial completion of degree requirements. If a thesis is presented, the student may be graduated with a total of 30 semester hours of which a minimum of 18 semester hours, exclusive of the thesis, shall be in the major field.

If a thesis is not submitted, the overall degree requirements shall be 33 semester hours, with a minimum of 21 semester hours in the major area.

All requirements for the degree must be completed within six years from date of the candidate's original registration for graduate course. That is, courses over six years old will not be allowed to count for credit toward the Master's degree. Only under unusual circumstances can this requirement be waived, and then, only by the Dean of The Graduate School at the request of the major adviser.

At least 18 semester hours of the courses in a student's program must be of the type designated as primarily for graduate students (7000 level courses). At least 12 semester hours of this must be done in the major. The department in which the collateral area is taken will determine whether or not any 7000 level courses are required.

Work done by graduate students for 6000 courses must be of a higher quality than that required of undergraduates. Also, the graduate student is required to do additional

work. This may consist of independent study or of such other work as the instructor may demand.

Courses of 6000 level are offered as undergraduate courses with 4000 level numbers. A student may not receive credit for a 6000 level course if he has credit at the 4000 level. A student may not receive credit for 6000 level courses if he has not been fully admitted to The Graduate School.

Courses are numbered according to the following system:

- 4000-4999—Courses primarily for seniors and for which graduate credit is not offered
- 5000-5999—Courses offered in The Graduate School but open to seniors with in 36 hours of graduation (graduate degree credit not allowed) (Must have 7000 level equivalent)
- 6000-6999—Senior courses open to graduate students. (Must have 4000 level equivalent)
- 7000-7999—Courses open only to graduate students
- 8000-8999—Courses open primarily to post-Master's students

Second Master's.

A student who holds a Master's degree from Memphis State University may pursue a second Master's degree if he is accepted by a department. No more than twelve (12) semester hours of the first degree may be applied toward the second degree. The department with which the student is studying will determine whether any credit from the former degree will be accepted toward the second degree. Any credit accepted toward the second degree must be within the regular time limit requirements for the Master's degree.

Amount of Work Permitted.

Sixteen semester hours shall be the maximum load for students devoting full time to graduate study. Only full-time students may register for more than six semester hours of course work in any one semester, including courses on campus, extension courses, and courses to be transferred from other institutions.

Graduate students who are employed on a full-time basis may not register for more than six semester hours.

A student may register for 18 semester hours during his final academic semester for the purpose of graduating, if he has had

a 3.5 average on previous graduate studies completed.

Certain residence courses, designated as "problems courses," or special individual research topics, are described in this bulletin. Seven semester hours of credit in problems or research courses may be applied to Master's degree requirements (4 to a major area or 4 to a collateral area) if the student has both a major and a collateral area. If the student does not have a collateral area, he may not apply more than 6 semester hours of special problems courses toward meeting degree requirements. Students are not allowed to register for more than one problems course in any one semester or full summer term.

Admission To Candidacy For The Master's Degree.

To become a candidate for a degree, the student must file an application on blanks available in the office of the Graduate Dean. The student must indicate on the application the degree program he is choosing. The application must contain plans for a complete program of graduate study and be approved by the student's major advisor and departmental chairman. Students in the Colleges of Business and Education must also obtain the approval of the Director of Graduate Studies for their respective colleges.

Before the "Application for Admission to Candidacy for the Master's Degree" can be approved and the applicant can be officially admitted to candidacy for a Master's degree, the student must have satisfied the following requirements:

1. The "Application for Admission to Candidacy for the Master's Degree" should be filed with the Graduate Office prior to the first day of classes of the semester in which the student wishes to graduate. The summer session is considered as one semester.
2. The student must have at least a "B" average on all graduate work. The program must include at least 18 hours of 7000 level courses. No grade below "C" is acceptable. No more than seven (7) hours of "C" are allowed.
3. If the student's program includes a thesis, the general field of the thesis must be approved prior to admission to candidacy. Forms for thesis approval are available in the Graduate Office.

4. The student's entire program must conform to the general regulations of the Graduate School and the requirements for his particular major.
5. The student's graduate work up to this point must be acceptable in quality and quantity to his major adviser, departmental chairman and/or director of graduate studies.

Every student who files an "Application for Admission to Candidacy for the Master's Degree" will receive from the Graduate Office an approved copy of the application or a letter explaining why approval has been withheld.

Audit Courses.

Students who are registered for one or more classes at Memphis State University may also register to audit a course with the approval of their adviser and the chairman of the department in which the course will be offered. Auditors are not to prepare lessons or papers, or take examinations. They are not to take part in class discussions or laboratory or field work.

Audit will be posted on a student's transcript only if at the time of evaluation the faculty member judges that the student has attended enough classes to earn the audit notation. The requirements for attendance should be made known to the student at the beginning of the term.

Persons who are not enrolled for credit courses may register for audit courses with the approval of the Dean of Admissions and Records and the department chairman.

Students enrolled for credit courses may take no more than one audit course per semester. Persons who are not enrolled for credit courses may register for a maximum of three courses with the approval of the department chairman.

Fees for audits will be assessed on the same basis as fees for credit courses.

Credit by Examination

The departments, with approval from the Dean of the Graduate School, may offer graduate courses for credit by examination provided that total credit by examination applicable to a degree or program does not exceed six (6) semester hours.

Credit for Work Completed Elsewhere and by Extension.

Credit earned at another institution must be presented for consideration at the time the student applies for degree candidacy. There is no automatic transfer of credit toward a

graduate degree, but, in general, residence work completed at another accredited graduate school may be accepted for not more than six semester hours of course credit toward a Master's degree. No transfer of credit will be approved if the grade point average for graduate work attempted is less than three on a four point system. No credit will be transferred unless it meets with the approval of the major adviser. (For exceptions see Department of Planning).

Six semester hours of course work completed through the Memphis State University Extension Division may be applied toward degree requirements, provided it meets the approval of the major adviser. Six hours may be applied in the major area or three hours in the collateral and three hours in the major. Extension work taken with another institution is not transferable.

Graduate credit is never granted for courses taken by correspondence. No credit will be allowed toward specialist or doctoral degrees for correspondence courses, extension courses, or special short courses.

Grades.

The grades which may be awarded are as follows: A—B—C (the lowest grade for which graduate credit is allowed)—D—F, I (Incomplete), IP (In progress), and W (withdrawn).

The grades for research, student teaching, thesis, and dissertation courses shall be "U" or "S". Letter grades are given for special problems courses.

An average grade of "B" must be maintained in ALL graduate work, and credit earned with a grade less than "C" may not be counted toward meeting requirements for the Master's degree. Work with a grade of "D" or "F" will be included in the grade point average computation. Grades of "D" or "F" are continued in the grade point average computation even though they have been repeated and the student earned a higher grade for the course.

Grades earned at another institution may not be used to raise the cumulative grade point average at Memphis State University.

Not more than 7 semester hours of credit with a grade of "C" may be applied toward meeting degree requirements.

The grade of I (Incomplete) indicates that the student has not completed the course for some unavoidable reason that is acceptable to his instructor. Unless the student completes the requirements for removal of the "I" within 45 days from the end of the semes-

ter or summer term in which it was received, the "I" will be changed to an "F", regardless of whether or not the student is enrolled. Extensions may be granted if the instructor's absence from the campus makes it impossible for the student to remove the incomplete. Extensions must be approved by the Dean of The Graduate School.

Instructors of research courses shall be allowed to give a grade for "work in progress" (IP) to extend the time for the completion of such research. In the event this time extension is for longer than one calendar year, the responsible instructor shall present a written recommendation to the Office of the Dean of Admissions and to the Dean of The Graduate School for an official dropping of the course or for the assignment of a specific grade.

A student who fails to earn thesis credit at the end of one academic semester following the registration for the total thesis credits allowable will be required to renew his thesis status. In order that he remain in active status, the Master's degree candidate will be required to register for 3 semester hours of audit credit. This renewal of active status must be continued each academic semester until the thesis is completed. Registration in either term of summer school will fulfill the requirement for the summer. Credit will be posted upon completion and acceptance of the thesis, but no more than 6 hours will be allowed for a Master's thesis, even though the student may have been required to register for additional hours in order to remain in active status. The registration may be waived for any semester if the student's adviser is not available or for other reasons approved by the department chairman.

Retention.

A student who has a cumulative grade point average below 3.0 will be placed on probation. Continuation in graduate school must be approved by the Dean of The Graduate School. Any person whose continuation is denied may appeal the decision to the University Council for Graduate Studies and Research.

Comprehensive Examination for the Master's Degree.

Before being recommended for graduation, every candidate for the Master's degree is required to pass a final comprehensive examination in his major and in his collateral area; it may be oral or written or both, at the discretion of the departments concerned. A

student will not be permitted to take the comprehensive examination before his Application for Degree Candidacy has been approved.

It is the student's responsibility to confer with his major and collateral area departments regarding the time and place of the examination. No reminders will be sent him by the Graduate Office.

Statement of Intention to Graduate.

Two steps are required to establish intention to graduate:

- (1) Filing of an "Intent to Graduate" card.
- (2) Submission of "Application for Admission to Degree Candidacy" forms.

Both of these items may be obtained from and are to be submitted to the office of the Graduate Dean prior to the first day of classes of the semester in which the student intends to graduate. The entire summer session is considered as one semester.

The "Intent to Graduate" card must show the degree to be earned. In the event that the candidate does not complete graduation requirements in the semester for which he has filed the "Intent to Graduate" card, he must resubmit the "Intent to Graduate" card as outlined above.

The "Application for Admission to Degree Candidacy" forms must be approved before a student is allowed to graduate, and a "B" average is required for such approval.

A student is not allowed to graduate in the last semester unless a "B" average is maintained for all semesters. Grades made the final semester are not allowed to average deficiencies. He will be permitted to graduate the subsequent semester.

The "Application for Admission to Candidacy for the Master's Degree" must be filed with the Graduate Office prior to the first day of classes of the semester in which the student wishes to graduate. The summer session is considered as one semester.

Intermediate and doctoral degree candidates will file Applications for Degree Candidacy immediately after passing the departmental qualifying examination and being accepted into an advanced degree program.

To facilitate communication, graduate students are expected to notify the Graduate Office of their changes of address. They should remember that all details connected with their work center in the Graduate Office.

Doctoral and Specialist Degrees.

Three Post-Master's degrees are offered by the Graduate School. These are the Education Specialist degree (Ed.S.), the Doctor of Education degree (Ed.D.), and the Doctor of Philosophy degree (Ph.D.). The Education Specialist degree is a one-year program beyond the Master's degree with the additional requirement of a thesis. The Ed.D. and Ph.D. programs require a minimum of two years beyond the Master's degree.

Education Specialist.

Students who wish to become candidates for the Education Specialist degree will observe all of the general post-master's requirements which are applicable.

The maximum combined credit in "Special Problems" and "Workshop" courses that can be applied to the degree requirements, in work taken above the Master's degree level, is 9 semester hours with not more than 6 semester hours applicable to the major concentration.

The Education Specialist degree is available with a major in three areas: Educational Administration and Supervision, Personnel Services, and Curriculum and Instruction. The major in Educational Administration and Supervision is offered by the Department of Educational Administration and Supervision. The major in Personnel Services is offered by the Department of Guidance and Personnel Services. The major in Curriculum and Instruction is offered through the Department of Curriculum and Instruction, Foundations of Education and Special Education and Rehabilitation. For specific information concerning areas of concentration, course requirements, etc., students should review the program descriptions which are found under the departmental listings in this publication.

The following concentrations are available at the Ed.S. level:

Education Specialist Degree (Areas of Concentration within the major are in parentheses.)

Ed.S.—Curriculum and Instruction
 (Cultural Foundations)
 Curriculum and Instruction
 (Educational Psychology)
 Curriculum and Instruction
 (Elementary Education)
 Curriculum and Instruction (Reading)
 Curriculum and Instruction
 (Secondary Education)

Curriculum and Instruction
(Higher Education)
Curriculum and Instruction
(English Education)
Curriculum and Instruction
(Music Education)
Curriculum and Instruction (Research
Methodology and Statistics)
Curriculum and Instruction
(Science Education)
Curriculum and Instruction
(Business Education)
Curriculum and Instruction
(Social Studies Education)
Curriculum and Instruction
(Mathematics Education)
Curriculum and Instruction (Special
Education and Rehabilitation)

Ed.S.—Educational Administration and
Supervision (Superintendency)
Educational Administration and
Supervision (Elementary)
Educational Administration and
Supervision (Secondary)
Educational Administration and
Supervision (Higher Education)

Ed.S.—Personnel Service (Counseling and
Guidance)

Doctor of Education.

The Doctor of Education degree is available with a major in three areas: Educational Administration and Supervision, Personnel Services, and Curriculum and Instruction. The major in Educational Administration and Supervision is offered by the Department of Educational Administration and Supervision. The major in Personnel Services is offered by the Department of Guidance and Personnel Services. The major in Curriculum and Instruction is offered through the Departments of Curriculum and Instruction, Foundations of Education and Special Education and Rehabilitation.

The maximum combined credit in "Special Problems" and "Workshop" courses that can be applied to the degree requirements, in work taken above the Master's degree level, is 18 semester hours with not more than 12 semester hours applicable to the major concentration.

For specific information concerning areas of concentration, course requirements, etc., students should review the program descriptions which are found under the departmental listings in this publication.

The following concentration areas are available at the Ed.D. level:

Doctor of Education Degree (Areas of concentration within the major are in parentheses.)

Ed.D.—Curriculum and Instruction
Curriculum and Instruction
(Elementary Education)
Curriculum and Instruction (Reading)
Curriculum and Instruction
(Secondary Education)
Curriculum and Instruction
(Higher Education)
Curriculum and Instruction
(English Education)
Curriculum and Instruction
(Cultural Foundations)
Curriculum and Instruction
(Educational Psychology)
Curriculum and Instruction (Research
Methodology and Statistics)
Curriculum and Instruction
(Music Education)
Curriculum and Instruction
(Science Education)
Curriculum and Instruction
(Business Education)
Curriculum and Instruction
(Social Studies Education)
Curriculum and Instruction
(Mathematics Education)
Curriculum and Instruction (Special
Education and Rehabilitation)

Ed.D.—Educational Administration and
Supervision
Educational Administration and
Supervision (Higher Education)

Ed.D.—Personnel Services (Student
Personnel Services)

To be eligible to receive the Doctor of Education degree, the student must have had a minimum of two years of acceptable experience in teaching or other appropriate educationally-related work. An approved internship may apply as a year of experience, but it may not satisfy more than half of the experienced requirement. If the internship is to be used to meet a part of the experience requirement, it must have the recommendation of the department in which the student is pursuing a major.

Candidates for the Doctor of Education degree will take at least 21 hours of graduate work outside The College of Education. This collateral work may be chosen from any University department that has been approved to offer a major at the Master's level, provided the areas are appropriate to the student's objectives and are approved by the departmental graduate advisory committee.

Each student admitted to candidacy must register for the dissertation seminar, a course open only to doctoral candidates. Each student will be expected to develop a dissertation outline and present it as a part of the course requirements. Participants in the seminar for doctoral candidates will be graduate faculty members of The College of Education and departmental advisory committee members.

Doctor of Philosophy.

The Doctor of Philosophy degree is offered by the Departments of Audiology and Speech Pathology, Biology, Chemistry, History, Mathematical Sciences, and Psychology. General requirements for the Ph.D. degree are outlined in the statements dealing with doctoral degrees. More detailed information about prerequisites, course work, research requirements, and degree programs can be obtained from the chairman of the respective department or Director of Graduate Studies. Any department may choose to admit a student to doctoral study without requiring the master's degree as a prerequisite.

Admission to Post-Master's Courses.

Students follow regular admission procedures to enroll for Post-Master's credit. Those who hold Master's degrees from accredited colleges or universities should attempt to present Graduate Record Examination scores prior to the initial registration (required by some departments). Students in the College of Education must present GRE scores (both aptitude phase and advanced test in education) prior to the completion of 12 hours of Post-Master's credit at Memphis State, if they plan to enroll in an advanced degree program. Any department may deny the student registration privilege if he lacks academic preparation, if he has inadequate grades, if he fails to present required test scores, or for other valid reasons. A student's initial enrollment in no way should be taken to mean that he has been accepted for degree candidacy. It is important that the student declare his intentions as soon as possible after his initial enrollment in order that candidacy status may be established. When the student is admitted to candidacy, his departmental graduate advisory committee will plan a complete program. Not until this time will the student's status be clearly defined.

Admission to Candidacy.

As soon as possible after the student has enrolled in course work, he should confer with his department adviser as to the department's policy concerning the completion of his application for degree candidacy. No student will be admitted to degree candidacy until the proper forms are approved by the departmental chairman or Director of Graduate Studies and the Graduate Dean and filed in the Office of the Dean of The Graduate School. Forms are available in the Graduate Office (Room 315, Administration Building). Failure to discuss long-range degree plans with the departmental adviser and the Graduate Dean may result in misunderstandings and misconceptions on the part of the student.

Each person applying for candidacy will be required to take a qualifying examination administered by the department in which the student wishes to major. The examination may cover specialized knowledge and general knowledge; writing skill will also be considered. To be eligible to take the departmental qualifying examination, the student must have presented scores on the Graduate Record Examinations (aptitude and an advanced test) to the Graduate Dean. The test scores, transcripts and other pertinent data will be examined by a graduate departmental committee approved by the Graduate Dean. All students who are allowed to enroll for Post Master's courses are not necessarily eligible to take the departmental qualifying examination. Low scores on the Graduate Record Examination and/or an unsatisfactory grade-point average may prevent a student from taking the qualifying examination. All grades regardless of date earned are considered.

The student should seriously consider the implications of pursuing a doctoral program in an institution from which he has obtained all of his prior degrees.

Minimum Residence Requirements.

The minimum residence requirement for a doctorate is three full years of graduate study (72 semester hours) of which at least one academic year shall be spent at Memphis State University as a full-time student. The academic year consists of two consecutive semesters exclusive of the summer sessions. Attendance in the summer session may not be used to satisfy the residence requirements for the doctoral degree. The residence requirement in the College of Education must

be completed after the student has been admitted to candidacy for the degree.

Candidates for the Ed.S. degree may satisfy residence requirements for the degree by attending Memphis State University as a full-time student during one regular academic semester or by attending as a full-time student both terms of two summer sessions. The residence requirement in the College of Education must be completed after the student has been admitted to candidacy for the degree. The one year residence requirement for the Ed.D. may be completed only by registering as a full-time student for two regular academic semesters.

Research Requirements.

An acceptable dissertation is a requirement for all doctoral degrees. The dissertation must embody the results of an extended research effort which is an original contribution. It should reflect the candidate's ability to conduct independent research and interpret in a logical manner the facts and phenomena revealed by the research. The student will be required to meet the specific regulations of the department in which he is majoring.

Ed.S. degree candidates will present a six-hour field study of a significant problem in a local school system or a six-hour thesis based on research related to the graduate major. Ed.D. degree candidates will present dissertations for 12 hours of credit. Ph.D. degree candidates will present dissertations for 9-30 semester hours of credit depending on departmental policy.

A student who fails to earn dissertation credit at the end of one academic semester following the registration for the total credits allowable will be required to renew his dissertation status. In order that he remain in active status, the candidate will be required to register for 3 semester hours of dissertation credit. This renewal of active status must be continued each academic semester until the dissertation is completed. (The summer term will be considered an academic semester for this purpose.) Credit will be posted upon the completion and acceptance of the dissertation, but no more than 6 hours will be allowed for an Ed.S. thesis and no more than 12 hours for an Ed.D. dissertation, even though the student may have been required to register for additional hours in order to remain in active status. This requirement may be waived for any semester the adviser

is not on the campus or for other reasons approved by the department chairman.

The candidate will be required to present to The Graduate School three copies of his dissertation to be bound. In addition, the student should provide a bound copy of his dissertation for the chairman of his doctoral committee. The dissertation, which will be microfilmed, must be accompanied by an abstract of not more than 600 words. The abstract will be published. Fees to cover the cost of microfilming and publishing are specified elsewhere and are to be paid by the student.

Time Limitation.

Credit earned more than ten years prior to the doctoral student's graduation cannot be applied toward meeting prerequisites or collateral requirements, unless approved by the student's departmental advisory committee, and the University Council for Graduate Studies and Research.

None of the last thirty-three semester hours of credit that is presented for fulfillment of the requirements for the Ed.S. shall have been earned more than six years prior to the student's date of graduation.

None of the last 66 hours of credit that is presented for fulfillment of the requirements for the Ed.D. shall have been earned more than 10 years prior to the student's date of graduation.

Course Load Limitations.

Full-time graduate students may enroll for a maximum of 16 semester hours. Those who register for 10 or more hours and devote a regular five-day week to study may be considered as full-time students. Graduate assistants who are responsible for the equivalent of two classes may register for no more than 9 semester hours; exceptions may be approved by the Graduate Dean upon the recommendation of the department. Students who are employed full-time may register for no more than 6 semester hours.

Acceptance of Credit Toward Degree Requirements.

Credit earned in another institution must be presented for consideration at the time the student applies for degree candidacy. Upon the approval of the student's department advisory committee, the credit will be transferred to apply toward the Ed.S., Ed.D., or

Ph.D., provided that the credit meets general University requirements. Not more than one year of transfer work beyond the master's degree can be applied to requirements for the Ed.D. or Ph.D. degrees. Only six hours of transfer credit will be permitted for the Ed.S. degree.

Comprehensive and Final Examinations.

A comprehensive examination may be required by a department prior to approval of a dissertation topic. After the completion of the dissertation and all the prescribed work for the degree, the doctoral candidate will be given a final examination by a committee composed of departmental and University representatives. If the student's performance on this examination is satisfactory, he will have completed all requirements for the degree.

Catalog Applicability

The degree requirements published in the graduate catalog issue of the Memphis State University *Bulletin* are valid for seven years from the beginning of the academic year to which the catalog applies. A student may complete his degree under the provisions of any valid MSU catalog provided the effective date of that catalog is not earlier than his initial admission to MSU or some other accredited institution of higher learning. (This issue of the catalog is valid *until* fall of 1983.)

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Description of Courses

The section which follows contains an alphabetical listing of all departments in the University and a description of all course offerings. The official course title appears in bold-face type following the course number. The figures in parentheses after the description of a course denotes the number of semester hours of credit for that course. If the credit is variable, to be fixed in consultation with the instructor, that fact is indicated by the minimum and maximum credit, as Biology 6000 (2 to 4).

Courses are numbered according to the following system:

- 4000-4999 Courses primarily for seniors and for which graduate credit is not offered
- 5000-5999 Courses offered in The Graduate School but open to seniors within 36 semester

hours of graduation.
(degree credit not allowed)

- 6000-6999 Senior courses open to graduate students
- 7000-7999 Courses open only to graduate students
- 8000-8999 Courses open primarily to post-master's students

Course numbers have no reference to the semester in which the courses are taught.

The *Schedule of Classes* is published a few weeks prior to the opening of each semester and The Summer Session. It contains a listing of the specific courses to be offered, with the time, place, and instructor in charge of each section. It also contains special announcements concerning registration procedures. Copies are available in the office of the Dean of Admissions and Records.

ACCOUNTANCY

PROFESSOR JAMES THOMAS THOMPSON, *Chairman*

Room 200, The College of Business Administration Building

In the Department of Accountancy, qualified students may work toward the M.S. degree with a major in accountancy, or the M.B.A. degree with an area of concentration in accountancy.

A. Prerequisites for M.B.A. and M.S. in accountancy:

In addition to Core I prerequisites, summarized on page 29, students should have successfully completed or complete Accounting 3110 and 3120, Intermediate Accounting I and II; Accounting 3010, Cost Accounting I; and Accounting 4510, Federal Income Tax I.

B. Each candidate for an M.S. Degree in Accountancy must complete a minimum of 33 semester hours and pass a written and/or oral examination. The 33 graduate credits comprising the M.S. in Accountancy include a minimum of 21 hours in the major (24 if a thesis is written). Accounting 7110, Accounting Theory I, Accounting 7120, Current Literature in Accounting, Accounting 7830, Techniques in Solving Accounting Problems, and Accounting 7010, Cases in Problems in Decision Making, are required in the major area. The remaining 9-12 hours are in collateral courses approved by the student's advisor.

At least 24 of the 33 credit hours required must be in courses designated primarily for graduate students (7000 level or above).

6220. Consolidated Financial Statements. (3).

Consolidations, mergers, foreign exchange. Spring semester. PREREQUISITE: Accounting 3120, Intermediate Acct. II.

6251. Readings in Auditing. (3).

Auditing theory, standards and procedures, case studies applicable to specific industries, current trends, study of American Institute of Certified Public Accountants releases pertaining to auditing. Spring semester. PREREQUISITE: Accounting 4240.

6520. Federal Income Tax II. (3).

Laws and regulations for corporations, estates, and fiduciaries. Spring semester. PREREQUISITE: Accounting 4510.

6540. Governmental Accounting. (3).

Accounting theory and practice applicable to federal, state, and local government; and to nonprofit institutions; budgetary control; classifications, control, and use of funds; financial statements and reports. Fall semester. PREREQUISITE: Acct. 2020, Fundamentals of Acct. II; and permission of instructor.

7001. Fundamentals of Accounting. (3).

An accelerated and in depth introduction to the conceptual foundations of accounting. The subject is presented as a dynamic information system for measuring and communicating economic and financial data for planning and control purposes. Primarily for non-business

students but is acceptable to remove accounting prerequisites for the M.B.A. and M.S. programs in the College of Business Administration.

7010. Cases and Problems In Decision Making. (3).

Accounting analysis for decision making utilizing a case approach; budgeting; cost analysis, administrative accounting. Fall semester. PREREQUISITE: Accounting 2020, 3010 or 3310, or consent of department chairman.

7020. Accounting Applications of Electronic Data Processing. (3).

Planning and operation of electronic data processing systems in accounting; application of quantitative techniques to administrative decision making using accounting data generated by the computer; flow charting of financial and cost data movement; single and integrated electronic data processing systems in accounting. PREREQUISITE: Accounting 3120, Management 3750 or consent of department chairman.

7110. Accounting Theory I. (3).

A study of the broad aspects and objectives of accounting with emphasis on generally accepted accounting principles, modern accounting trends, and contemporary controversial topics, through a study of the current releases of the American Institute of Certified Public Accountants, the American Accounting Association, and other research related to changing concepts. PREREQUISITE: Accounting 3120, 3310 or permission of the instructor.

7120. Current Literature in Accounting. (3).

A further study of the development of accounting theory and the influence of professional accounting societies and regulatory agencies upon the accounting profession. PREREQUISITE: Accounting 3120, 3310.

7240. Cases in Auditing. (3).

Review and refinement of generally accepted auditing standards, procedures and extension of auditing procedures; preparation of long form audit reports and study of special investigations; study of auditing research bulletins of the American Institute of Certified Public Accountants, and pronouncements of the S.E.C. and other regulatory agencies. PREREQUISITES: Accounting 3120, 3310, and 4240

7310. Managerial Cost Analysis. (3).

Budgets, determination of standards, variances and their functions, cost reports, profit projecting, direct costing, gross profit and break-even analysis, cost-profit-volume analysis, capital expenditure control, comparative cost analysis. PREREQUISITE: Accounting 3310.

7510. Advanced Taxation. (3).

Selected research and study in the taxation of individuals and business organizations by Federal and state governments; preparation of selected state and Federal tax returns including those associated with income, excise, gift, death, sales, and payroll; tax practice and procedures. PREREQUISITE: Accounting 4520 or consent of department chairman.

7830. Techniques in Solving Current Accounting Problems. (3).

Review of C.P.A. Examination, including theory of accounts, accounting practice, and auditing. Spring semester. PREREQUISITE: Substantial accounting background and permission of instructor.

7910. Problems in Accounting. (1-3).

Directed independent reading and research projects in an area selected by the student with the approval of the staff member supervising. PREREQUISITE: Consent of the department chairman.

†7996. Thesis. (3-6).

Application for writing a thesis must be filled out on an approved form after consultation with the major professor and filed with the Dean of the Graduate School.

†Grades of S, U, or IP will be given.

ANTHROPOLOGY

PROFESSOR AUGUSTUS SORDINAS, *Chairman*

Room 122, Clement Hall

The Department of Anthropology offers a collateral concentration area. Graduate students who select Anthropology as a concentration area of study will structure their program in consultation with their major advisor and the Chairman of Anthropology.

6051. Anthropology and Education. (3).

(Same as Foundations of Education 6051)

An advanced study of the cultural transmission process with emphasis on identifying differing behavioral, cognitive and learning styles of various ethnic groups within American society and selected third world countries. Encounters of U.S. subcultural groups with the public education system are examined. PREREQUISITE: Permission of instructor.

6065. Contemporary Anthropological Theory. (3).

Contemporary growth of theories and methods in anthropology. PREREQUISITES: Anthropology 1100 and 1200; or permission of instructor.

6250. Complex Societies. (3).

Folk society, peasant society, and the pre-industrial state. Community studies. Anthropological studies of social institutions and groupings in industrial settings. PREREQUISITE: Anthropology 1200 or permission of instructor.

6251. Comparative Social Structures. (3).

Comparative analysis of social structures and their functional relationships to other cultural institutions, with emphasis on family types, marriage patterns, and kinship. PREREQUISITE: Anthropology 1200 and at least one survey or area course in ethnology; or permission of instructor.

6252. Economic Anthropology. (3).

Comparative analysis of economic systems and their functional relationships to other cultural institutions; production, distribution, and consumption in non-literate groups; concepts of wealth, value, property, and ownership. PREREQUISITE: Anthropology 1200 and at least one survey or area course in ethnology; or permission of instructor.

6253. Anthropology of Religion. (3).

Comparative analysis of religious systems and their functional relationships to other cultural institutions; inter-relations of myth, magic, and ritual; types of religious institutions and religious practitioners.

6254. Culture Change. (3).

Internal and external factors causing change in the small-scale society; theories of cultural evolution; social changes involved in the emergence of civilization; changes involved in industrialization.

6255. Political Anthropology. (3).

Comparative analysis of political systems and their functional relationships to other cultural institutions; formation and segmentation of political structures; requisites of leadership and political control.

6351. Evolution of Civilization. (3).

Comparative investigation of the origins of civilization in the Old and New Worlds. Development and study of models to explain the cultural, social, political, and other changes that lead to and define civilization. PREREQUISITE: Anthropology 1200 or permission of the instructor.

6354. Archaeology of the Holy Land. (3).

A survey of the archaeological remains in the Holy Land from the Stone Age to the early Christian Era.

6411. Urban Anthropology. (3).

Anthropological studies of pre-industrial and industrial cities. Urbanization, movements of social transformation and other processes of adjustment to an urban milieu. Urban slums, ethnic enclaves, and housing developments in cross-cultural perspective. Urban and social kinship and social organization. Urban community development. Urban research techniques. PREREQUISITE: Anthropology 1200 or Sociology 1111; or permission of the instructor.

6724. Primitive Technology. (3).

An anthropological survey of the development of technology. Analysis of the origins of primitive techniques, subsistence patterns, arts, crafts, machines, and tracing of their relationship to social organizations. A comparative examination of prehistoric and historic information.

6742. Anthropology of Contemporary Sub-Saharan Africa. (3).

Development of African societies from traditional institutions to contemporary states.

6751. Culture and Personality. (3).

Comparison of factors involved in the analysis of personality as contrasted to culture; the interaction of these factors; problems of studying personality cross-culturally.

6752. Applied Anthropology. (3).

Applications of anthropological knowledge and techniques to contemporary problems in government, industry, public health, and colonial and native administration. Emphasis on, but not limited to, contacts between industrial and nonindustrial societies. PREREQUISITE: 12 semester hours of anthropology or permission of the instructor.

6975. Directed Individual Readings. (1-3).

Intensive guided survey of anthropological and related literature dealing with topics selected by advanced students and accepted by the staff. Compilation, synthesis, and evaluation of the published data; preparation for graduate level work, for students considering anthropology as a profession. PREREQUISITE: Permission of staff.

6985. Directed Individual Research. (1-3).

Intensive guided study of original data, in areas selected by advanced students and accepted by the staff. Collection and/or processing of data in physical anthropology, ethnology, applied and urban anthropology, archaeology, and linguistics; description, classification, analysis, and synthesis. Preparation for publication. PREREQUISITE: Permission of chairman and the designated staff.

7231. Seminar in New World Ethnology. (3).

Intensive studies of selected cultural topics, utilizing data derived from ethnic groups of North and South America.

7242. Seminar in Old World Ethnology. (3).

Intensive studies of selected cultural topics, utilizing data derived from ethnic groups of Europe, Asia, and Africa.

7331. Seminar in New World Archaeology. (3).

Intensive studies in selected cultural topics, utilizing data derived from prehistoric sites in North and South America. PREREQUISITE: Graduate standing.

7342. Seminar in Old World Archaeology. (3).

Intensive studies of selected cultural topics, utilizing data derived from prehistoric sites in Europe, Asia, and Africa.

ART

PROFESSOR DANA DOANE JOHNSON, *Chairman*

Room 201, Jones Hall

The Art Department offers graduate programs leading to the following three degrees: the Master of Arts degree, the Master of Arts in Teaching degree, and the Master of Fine Arts degree.

The requirements for the **M.A. degree** follow:

1. A total of 30 semester hours for the student who elects to write an acceptable thesis.
2. If a thesis is not submitted, the overall degree requirements shall be 33 semester hours.
3. A minimum of 18 semester hours of art history (not

including Art 7130) and exclusive of the 3 semester hours of thesis credit.

4. Eighteen semester hours of 7000 level courses.
5. Two electives from the department of Art or from another department of the university, and the completion of Art 7130. These electives must be approved by the advisor.
6. Satisfactory grade on a written comprehensive examination at option of examining committee.
7. Thesis to be approved by a faculty committee with the member under whom thesis was prepared as chairman.

Department prerequisites:

1. If, after evaluation of student's transcript, the art history faculty feels that he is deficient in the major areas of western European or American art, he will be required to take stipulated undergraduate courses or pass examinations for credit given by the appropriate professor.
2. Generally speaking, advanced studies in art history require proficiency in at least one foreign language, depending upon the area of concentration selected by the student. When such is the case, the student will be required to prove reading skill in the stipulated language.

Program admission:

1. Undergraduate major in art history of 27 hours or its equivalent in art history hours and supportive courses approved by art history faculty after transcript evaluation.
2. Approval by the art history faculty of student's chosen area of concentration after transcript evaluation.
3. Meet the university's requirements for admission to the graduate school.

The requirements for the M.A.T. degree follow:

1. A total of 36 semester hours:
 - a. Nine semester hours in professional education courses including: EDFD 7001, EDRS 7521 and either EDPS 7112 or EDPS 7121.
 - b. Nine semester hours in art education courses including 3 of the 4 that follow: ART 7410, ART 7430, ART 7440, ART 7450.
 - c. Fifteen semester hours in studio art.
 - d. Three semester hours of art history.
2. Twenty-four semester hours of 7000 level courses.
3. Satisfactory grade on a written comprehensive examination over course work, with follow-up oral examination at option of examining committee.

Departmental prerequisites:

1. If, after evaluation of student's transcript, the art education faculty feels that he is deficient in basic art education, studio art or art history, he will be required to take stipulated undergraduate courses or pass examinations for credit given by the appropriate professor.
2. Student must be certified to teach art before admission to the M.A.T. program.

Program admission:

1. Undergraduate major in art education of 27 semester hours or its equivalent in art education hours and supportive courses approved by art education faculty after transcript evaluation.
2. Approval by the art education faculty of student's proposed program after transcript evaluation.
3. Meet the university's requirements for admission to the graduate school.

The requirements for the M.F.A. degree follow:

(Concentration areas include Ceramics, Graphic Design, Interior Design, Painting, Printmaking, and Sculpture)

1. A total of 60 semester hours including a thesis of 6 semester hours in the student's area of concentration.
2. A total of 36 semester hours of studio art, excluding

the thesis, with a minimum of 24 semester hours in the student's area of concentration.

3. Thirty semester hours of 7000 level courses.
4. A total of 9 semester hours in art history.
5. A total of 9 semester hours of electives.
6. Satisfactory grade on a written comprehensive examination over course work, with follow-up oral examination at option of examining committee.
7. Thesis (exhibition) to be approved by a faculty committee with the member under whom thesis was prepared, as chairman.

Departmental prerequisites:

1. *Previous education and experience.* Normally admission to the graduate program will require an undergraduate major in the applicant's concentration area. (See concentration areas listed above.) A baccalaureate degree from an accredited institution is required, with not less than 70 semester hours of art of which 12 hours should be in art history and 18 hours (24 hours for Graphic Design and Interior Design) must be in the concentration studio courses. Exceptions to the above requirements will be considered, however, when the portfolio and professional experience warrant it. *Note:* For Graphic Design and Interior Design three years of prior professional experience is also required.

Program Admission:

1. *Portfolio.* Approval by a graduate selection committee of the applicant's creative work as specified below:
 - a. Graphic Design. Original and/or printed works.
 - b. Interior Design. 20-30 slides of drawings, perspectives, renderings, plans, elevations, etc.
 - c. Ceramics, Painting, Printmaking, and Sculpture. 20-30 slides of mainly work in the applicant's concentration area plus some slides of drawings and (optional) other media. Include additional views of 3-D pieces. Submission of original work might be further requested.
2. *Letters of recommendation.* Letters from three persons familiar with the applicant's creative activity but who are not members of the graduate selection committee. (If applying for a teaching assistantship, each recommendation should contain reference to the applicant's teaching ability.)
3. *Statement.* A brief, personal statement of professional ambitions, intended concentration area, other special creative interests, and outline of previous professional experience.
4. *Deadline.* Applications for any given semester including summer sessions are normally decided during the regular academic year (approximately November 30th for Spring semester and April 30th for Summer and Fall entrance). Late applications will be considered, however, if space and faculty are available.
5. *Address.* Send slides, work, letters of recommendation, and statement to:

Director of Graduate Studies
Department of Art,
Memphis State University
Memphis, Tennessee 38152
6. *Conditional Admittance.* The graduate selection committee can award conditional admittance after reviewing the application with the provision that the student complete undergraduate prerequisites or otherwise correct deficiencies.

admission to Candidacy for all Graduate Art Degrees:

The student shall apply for admission to degree candidacy after the completion of 15 semester hours of graduate work. To be approved for admission for candidacy, the student shall have:

- A grade point average of at least 3.0 on a 4.0 scale.
- Removed all departmental prerequisite requirements.
- A planned degree program which meets all departmental and graduate school requirements.

111. Prehistoric Art. (3).

An examination of the art products of various Paleolithic, Mesolithic, Bronze and Iron Age cultures, with emphasis given to Franco-Cantabrian Cave Paintings and Megalithic Architecture.

121. Ancient Arts of the Near East. (3).

A study of architecture, sculpture, painting, and the minor arts in Egypt and the Ancient Near East.

122. Greek and Roman Art. (3).

A study of the architecture, sculpture, and painting from Aegean Art to the Fall of the Roman Empire.

131. Early Christian and Byzantine Art. (3).

The development of architecture, sculpture, and painting through the early medieval period, with emphasis on early Christian and Byzantine Art.

134. Romanesque and Gothic Art. (3).

The development of architecture, sculpture, and painting from the Carolingian (Proto-Romanesque) Period through the Gothic Period.

141. Renaissance Art. (3).

Western Art and Architecture from the Medieval period through the Renaissance.

146. Baroque Art. (3).

An historical study of the architecture, sculpture, and painting from the end of the Renaissance to the Industrial Revolution.

154. Twentieth Century Art. (3).

A study of the major art developments in Europe and the United States from Post-Impressionism to the present.

162. Spanish Colonial Art. (3).

A study of the arts in South America, Mexico, and the United States during the period of Spanish Rule. Chiefly, a survey of Baroque Art in the Americas.

163. Pre-Columbian Art. (3).

A survey of the ancient arts of Mexico, Central America, and South America from c. 1000 B.C. to European contact.

165. Art of the American Indian. (3).

A survey of the arts of the North American Indians from prehistory to the present.

6167. Art in America I. (3).

A survey of American Art: architecture, sculpture, painting, and the minor arts within the Continental United States from prehistoric times to the Civil War.

6168. Art in America II. (3).

A continuation of Art 6167: architecture, sculpture, painting and the minor arts in the Continental United States from the Civil War period to the present.

6171. Oriental Art: India (3).

Artistic traditions and monuments of India from the Indus Valley period to the 19th century as related to Hinduism, Buddhism and Islam; the influence of these traditions on Southeast Asia.

6172. Oriental Art: China and Japan. (3).

Artistic traditions and monuments of China and Japan from the prehistoric periods to the 19th century as related to Confucianism, Taoism, Buddhism and Shinto.

6181. Primitive Art. (3).

A survey of the art of the primitive Negro of Africa, the aboriginal people of Oceania, and the American Indians.

6201. Design in Plastics. (3).

A course in two-dimensional and three-dimensional design in plastics employing the basic methods of casting resins and thermoheating processes using sheet, rod, and tube plastics.

6202. Design in Plastics. (3).

Further development of creative plastics design through thermoheating processes of vacuum forming, blow forming, and resin casting processes.

6221. Graphic Design. (3).

Advanced problems in the fields of advertising and merchandising design.

6222. Graphic Design. (3).

A continuation of Art 6221 with special attention given to individual problems and personal approach.

6231. Interior Design. (3).

Advanced study in interior design. Problems in designing complete interiors for homes and commercial structures.

6232. Interior Design. (3).

A continuation of Art 6231 with further problems in home and commercial interiors.

6235. Interior Design Research. (3).

Intensive study of special areas of interior design with emphasis on space planning and lighting.

6236. Interior Design Research. (3).

Continuation of Art 6235 with emphasis on furniture design and construction.

6321. Drawing and Painting. (3).

An advanced course in drawing and painting methods with emphasis on transparent water-color.

6322. Drawing and Painting. (3).

A continuation of Art 6321 with attention given to various mixed media.

6331. Painting. (3).

A consideration of advanced problems in oil painting, presupposing that the student has mastered basic techniques and is ready for a more experimental approach to the subject.

6332. Painting. (3).

A continuation of Art 6331 with emphasis on development of a personal style.

6341. Illustration. (3).

A survey of the many areas requiring the services of an illustrator and including the preparation of book, magazine, advertising, and television illustrations.

6342. Illustration. (3).

A continuation of Art 6341, dealing with analysis of fine art techniques of drawing and painting as they apply to commercial illustrations.

6351. Printmaking. (3).

Specialization in one or two graphic media. Students are encouraged to develop a personal imagery and the necessary technical abilities.

6352. Printmaking. (3).

The culminating course in the graphic arts in which work may be done in woodcut, etching, or lithography.

6380. Museology. (3).

The history and development of museums; mandate and variety of institutions; significant research facilities; historical and contemporary collections, and the educational roles of museums in contemporary society.

6381. Art Curatorial Techniques. (3).

Concentrates on curatorial responsibilities and functions; receiving and shipping methods, registration, physical and environmental security, research, conservation, and a study of the art market and publications.

6382. Museum Operation. (3).

Basic aspects of museum organization, management, exhibit planning and execution, and maintenance of collections and records.

6424. Textiles. (3).

The place of textiles and textile designing in a secondary school art program including work with equipment, supplies, processes, and ideas basic to a comprehensive textile craft course.

6511. Sculpture. (3).

Advanced work in various sculptural media.

6512. Sculpture. (3).

A continuation of Art 6511 with emphasis upon personal expression.

6521. Ceramics. (3).

An introductory course in pottery-making, including hand forming and production processes using clays, plaster, and cements.

6522. Ceramics. (3).

A continuation of Art 6521, offering further study in pottery-making and glazing with emphasis on design.

6531. Jewelry. (3).

Jewelry-making with emphasis on materials and equipment. The nature and possibilities of metals, stones and other materials are investigated in terms of good jewelry design. Basic projects in enameling, soldering, pickling, buffing, and other techniques.

6532. Jewelry. (3).

A second course in jewelry-making and metalwork. Study and practice in good design. Work done in lost wax casting, champleve, cloisonne, and combinations of materials.

6621. Workshop in Art. (3).

The study of specific art problems as they apply to the individual student with emphasis on basic art concepts and creative experience.

6622. Workshop in Art. (3).

A continuation of Art 6621, providing study of problems appropriate to the need of the individual student.

6641. Study and Travel in Art. (3-6).

Travel to important art areas of the world and specialized study under the direction of a departmental faculty member. Research problem to be assigned and evaluated by major professor required.

7120. Graduate Problems in Medieval Art. (3).

Study of selected areas of special problems in Early Medieval, Romanesque or Gothic Art.

7130. Art History Methodology. (3).

Study of the techniques of Art History research and composition; the use of various kinds of source material and bibliographical aids. Required of all candidates.

7140. Graduate Problems in Renaissance Art. (3).

Study of selected areas or specific problems of Renaissance Art.

7142. Graduate Problems in Baroque Art. (3).

Study of selected areas or specific problems in Baroque Art.

7150. Graduate Problems in Nineteenth Century Art. (3).

Study of selected areas of specific problems in Nineteenth Century Art.

7152. Graduate Problems in Twentieth Century Art. (3).

Study of selected areas or specific problems in European or American Art.

7180. Graduate Problems in Primitive Art. (3).

Study of selected areas or specific problems in Primitive, Pre-Columbian or North American Indian Art.

7330. Studies in Two-Dimensional Media. (3-12).

Exploration of an original visual arts idea in two-dimensional media. This course may be repeated several times depending upon the recommendation of the advisor.

7410. Seminar in Art Education. (3).

Analysis of fundamental concepts and issues in art education; examination of current problems and current literature in art related to other professions.

7430. Research in Art Education. (3).

Study and use of observational methods, statistical and descriptive studies related to art education.

7440. Curriculum and Instructional Theories Applied to the Visual Arts. (3).

Advanced study of factors affecting curriculum decisions, analysis, organization, and preparation related to the visual arts. Evaluation and sources of art curriculum improvement and innovations.

7450. History and Philosophy of Art Education. (3).

Study of the literature related to American Art Education movements.

7550. Studies in Three-Dimensional Media. (3-12).

Exploration of an original visual arts idea in three-dimensional media. This course may be repeated several times depending upon the recommendation of the advisor.

7660. Directed Individual Study. (3-9).

Individual investigation of special research problems or projects. May be repeated upon the recommendation of the advisor.

7770. Studies in Mixed Media. (3-12).

Exploration of an original visual arts idea in mixed media. This course may be repeated several times depending upon the recommendation of the advisor.

†7996.Thesis. (3-6).

Preparation and defense of a thesis prepared under the direction of major professor. Studio Art thesis requires an exhibition.

†Grades of S, U, or IP will be given.

AUDIOLOGY AND SPEECH PATHOLOGY

PROFESSOR JOHN V. IRWIN, *Acting Chairman*

Speech and Hearing Center, 807 Jefferson

Programs leading to the M.A. degree are offered with the major in Audiology and Speech Pathology with concentrations in (1) Audiology and (2) Speech Pathology. Each student will plan his program in consultation with his advisor. Students may pursue either a thesis or non-thesis program.

Thesis Program Minimum Requirements:

A. 36 semester hours of graduate work with 24-30 semester hours, exclusive of thesis, in the major area, and completion of academic and practicum requirements for the Certificate of Clinical Competence of the American Speech and Hearing Association.

B. Completion of one hour of clinical experience (AUSP 7104 for Audiology majors and AUSP 7208 for Speech Pathology majors) in each semester of full time graduate study at this University. Students must complete a minimum of three semester hours of clinical practice with a grade of "B" or above within the time limit of six semesters, and must obtain a "B" or above in their last two semesters. Maximum of 4 semesters may be counted toward 36 hour requirement.

C. Completion of AUSP 7005, Introduction to Graduate Study.

D. Completion of thesis.

E. Completion of oral comprehensive.

Non-thesis Program Requirements:

The same requirements listed above will be met for non-thesis students except that:

1. AUSP 7990 (Special Projects) will be required in lieu of thesis, and
2. Written comprehensive examinations will be completed during the final semester of graduate study.

Departmental requirements leading to the Ph.D. degree in Audiology and Speech Pathology are listed below.

A. *Advising.* The initial advisor will be assigned to a specific candidate and be chairman of the advisory committee. The committee's charge will be diagnostic in evaluating the candidate's need both academically and clinically, and the development of his academic program. The evaluation is to be completed by the end

of the second semester and is to be in written form. After completion of the qualifying examination, revisions will be made as to the final academic plan determined for the candidate.

- B. **Department Hours.** Requirements for the doctoral degree shall be sixty semester hours beyond the master's degree. Courses taken at Memphis State University numbered 7000 or above shall be counted as part of the sixty credits. Thirty-three hours shall be taken within the Department of Audiology and Speech Pathology of which a maximum of nine dissertation hours may be counted. Individual Readings, A USP 8100, 8121, and Individual Projects, A USP 8200, 8221, may not be counted as part of the required thirty-three hours within the Department. These courses should be regarded as an opportunity to individualize the program and may be elected by a student only as part of comprehensive program planning with his departmental committee. They may count as part of his sixty hours with the approval of his advisory committee.
- C. **Collateral Area.** Because the intent is to provide broad, unique, and flexible educational opportunities to doctoral level students, an additional twenty-four hours from collateral areas are recommended to each student, as agreed upon by his departmental committee. These courses may be totally within the conjunction with the Medical Units of the University of Tennessee, courses in the area of statistical and experimental design through the Department of Psychology or Mathematics, and courses distributed among other departments in the University such as Special Education and Rehabilitation, Early Childhood Development, etc.
- D. **Candidacy.** After completion of all departmental requirements, a student may apply for candidacy, if he has satisfied one of the following four alternatives, and has completed the comprehensive examination.
 - (1) Reading proficiency in two languages, ordinarily selected from classical and modern Greek, Latin, French, German, Russian, Italian, and Spanish. E. T. S. Examination will be required to determine proficiency.
 - (2) Proficiency (ability to function in that language) in depth (conversation, lecture, reading and writing) in one of the above languages.
 - (3) Reading proficiency in one of the above languages plus proficiency in experimental design and statistics.
 - (4) Proficiency in depth in experimental design, statistics, and electronic data processing.
- E. **Comprehensive Examination.** The comprehensive exam will be specific and will be for three six-hour days of writing, for a total of eighteen hours. The examination will be written in nature, followed by an oral comprehensive. During the written and oral comprehensives, three members of the department will participate in addition to one outside member from a supportive area.
- F. **Dissertation.** The dissertation committee will consist of the minimum of a chairman plus two members. Two of the members must be in the major area of the department, and one of the members in the minor area of the department. It is possible that these

committee members are independent of all previous committee members.

- (1) The type of dissertation may be either original research or theoretical; that is, historical critical.
- (2) The prospectus-pilot:
 - a. The determining of the significance of the question,
 - b. demonstrating understanding of prior information,
 - c. plan to answer the question.

After these three are obtained, the pre-prospectus will be approved to begin its pilot program. In addition, a formal presentation to the department faculty and students is necessary prior to the final implementation of the dissertation.

- (3) Approval.
 - a. The candidate will need written approval accepting his dissertation prior to the orals in defense of his dissertation.
 - b. The defense of the dissertation will be oral, and consist of a minimum of five members. Protocol includes after the defense, the revision for the final copy of the dissertation, retyping, and resubmitting to the chairman of the committee for final approval.

BASIC SCIENCE AREA

7000- Acoustic Phonetics. (3).

8000. Study of the acoustic theory of speech production and techniques of acoustic analysis; acoustic structure of vowels and consonants as well as prosodic features; and speech synthesis and speech perception. Discussions and demonstrations of basic instrumentation used to measure speech parameters.

7001- Hearing Science. (3).

8001. Study of the measurements utilized in psychophysics and the physical structures of the hearing mechanism.

7003- Anatomy and Physiology of the Speech

8003. Mechanism. (3).

Study of the structure and function of bodily organs related to the processes of speech production.

7004- Anatomy and Physiology of the Hearing

8004. Mechanism. (3).

Study of the structure and function of bodily organs related to the processes of hearing.

7005. Introduction to Graduate Study. (3).

Students become acquainted with graduate studies through introduction to research applicable to Speech Pathology and Audiology and theories of measurement, including statistical and behavior designs, reliability and judgments, and replicability.

7006- Language and Speech Development. (3).
8006. Study of the normal acquisition and maintenance of speech and language, theoretical formulations about language and speech behavior, and approaches to its study. Students observe and describe the language of children of various ages whose development is within normal range.

7007- Communicative Interaction. (3).
8007. A study of concepts and processes fundamental to communicative interaction. Emphasis is given to application of such concepts and processes to the student's own communicative interactions.

7010- Neurological Bases of Communication. (3).
8010. Study of the central nervous system and its role in the receptive and expressive aspects of normal speech and language. Consideration of CNS dysfunction resulting from brain injury, particularly as it pertains to speech and language.

7011- Psycholinguistics: Symbol Systems and Communicative Behavior. (3).
 Study of linguistic structures of language, the nature and forms of symbolic behavior, and the human uses of symbols, particularly in communication.

7012. Seminar in Communicative Theory. (3).
 A survey of contemporary approaches to communication. The course examines semantic and linguistic theories, cybernetic and information theories, attitude formation and change, all based upon the concepts of experimental and philosophical designs.

7013- Psychoacoustics. (3).
8013. Presentation and discussion of modern theoretical and applied research concerning the psychological responses to acoustic stimuli.

8014. Physiological Acoustics. (3).
 Presentation and discussion of modern theoretical and applied research concerning the physiological responses principally of the auditory system to acoustic stimuli.

8015. Instrumentation. (3).
 The measurement and calibration of instrumentation typically used in speech and hearing science along with a discussion of pertinent electroacoustic principles.

8016. Seminar in Language Behavior. (3).
 Exploration of topics relevant to human communicative behavior. With different content, may be repeated for up to 12 hours.

AUDIOLOGY

7100. Introduction to Audiology. (3).
 An introduction to the study of audiology. Topics include: physics of sound, hearing loss, basic audiometric testing and hearing conservation.

7101- Audiological Concepts. (3).
8101. Investigation of basic audiological concepts and their applicability to clinical procedures. Topics include: masking, bone conduction, speech reception and speech discrimination. PREREQUISITE: 7100.

7102- Hearing Disorders. (3)
8102. Investigation of the audiological effects of diseases and injuries of the hearing mechanism.

7103- Differential Audiology. (3).
8103. Consideration of special auditory tests involved in the differential diagnosis of peripheral hearing problems. PREREQUISITE: 7101 or equivalent.

7104- Clinical Experience in Audiology. (1).
8104. Supervised clinical experience in the evaluation and/or management of clients with hearing impairments. Designed to meet student's individual needs. May be repeated for up to 6 hours.

7105- Advanced Differential Audiology. (3).
8105. Consideration of special auditory tests and electrophysiological techniques in the differential diagnosis of nonorganic, peripheral, and central hearing disorders. PREREQUISITE: 7101 or equivalent.

7109. Medical Aspects of Audiology. (3).
 A comprehensive introduction to acute and chronic hearing disorders traceable to disease and to their medical treatment.

7111- Experimental Audiology. (3).
8111. Study of experimental techniques; appreciation of research problems, procedures, and instrumentation culminating in completion of an independent research project.

7112- Seminar in Audiology. (3).
8112. Detailed study of selected topics in audiology. With different content, may be repeated for up to 12 hours at the 8000 level. PREREQUISITE: Permission.

7113- Industrial, Community and Military Audiology. (3).
8113. Study of the requirements of audiology in the management, control, evaluation, and conversation of hearing problems in industry and the military.

7114- Amplification for the Hearing Impaired. (3).
8114. A detailed study of the individual and his uses of amplification. Topics include: selection and operation of hearing aids, induction loop systems and group auditory trainers. PREREQUISITE: 7100.

7115- Child Audiology. (3).
8115. Investigation of the audiological problems of children.

**7116- Early Childhood Intervention with Pre-School
8116. Deaf Children. (3).**

Study of the language development of the deaf child with emphasis on prelinguistic utterances, language comprehension and gesture language; effects of hearing impairment upon social, mental, and emotional development.

7122- Aural Rehabilitation. (3).

8122. Introduction to and analysis of principles and techniques used for children and adults with impaired hearing to develop listening and visual skills and to utilize residual hearing. PREREQUISITE: 7100.

7401- Therapeutic Communication in Speech

8401. Pathology and Audiology. (3).

A study of theory and practice of therapeutic communication with application to persons with communicative disorders. Application to various types of clinical situations are explored. Students have the opportunity to study their own clinical behavior with special reference to their communicative relationships.

7402- Organization and Administration of

8402. Clinical Programs. (3).

Exploration of administrative structures applicable to the variety and scope of clinical programs in Speech Pathology and Audiology. Emphasis is placed on possibilities for organizing, administering, and conducting such clinical programs, with special emphasis on those in schools.

7403- Seminar in Parent Counseling (3).

8403. Study of literature pertaining to parents of children with communication disorders, emphasizing therapeutic and/or educational approaches. Observation of the types of parent contact applicable to speech pathologists and audiologists. PREREQUISITE: 7007 or 7401.

7404- Communication Centered Therapy. (3).

8404. Investigation of theoretical bases of a communication-centered approach to speech and language therapy and its clinical application. Readings and experience will include use of conversation units in speech and language activities, communicative play, and role playing.

7990. Special Projects. (3).

Geared to individual needs of students who wish to explore an area with faculty guidance. Students may pursue a pilot study. May be taken twice. PREREQUISITE: Permission of individual faculty member to be involved.

†7996. M.A. Thesis. (3).

8100. Individual Readings, Audiology. (3).

Independent study of literature in an area of audiology. May be repeated as often as desired.

8121. Individual Projects, Audiology. (3).

Students pursue individual research projects under the direction of a member of the graduate

faculty in audiology. May be repeated as often as desired.

8124. Clinical Supervision in Audiology. (1).

Study of processes involved in supervision of student clinicians in diagnostic audiology and/or aural rehabilitation. Experience in supervision of M.A. level student clinicians is provided.

8109. Audiology Internship in Medical Settings. (3 6).

Lectures, conferences, and systematic experience as a participant in an interdisciplinary team with otology.

†9000. Dissertation.(9-12).

SPEECH AND LANGUAGE PATHOLOGY

7200. Introduction to Speech Pathology. (3).

An overview of the field of Speech Pathology including study of the various speech disorders and the roles of the speech pathologist in professional practice. Designed primarily for non-majors, or beginning graduate students.

7201- Cleft Palate Habilitation. (3).

8201. Study of cleft palate speech with emphasis on articulatory, resonance, and phonatory aspects as well as on medical and habilitative and rehabilitative principles.

7203- Voice Disorders. (3).

8203. In depth review of voice disorders by patterns of deviation, etiology, and techniques of intervention. Opportunity for original papers and/or projects.

7204- Articulation. (3).

8204. Study of current research in articulation, testing, prediction, and retraining procedures.

7205- Stuttering. (3).

8205. To review, critically evaluate, and synthesize information regarding the definition of stuttering, theories of etiology, symptomatology, therapy approaches, and methods of research.

7207- Speech and Language Assessment I. (3).

8207. Principles and procedures for tests of language and speech dysfunctions; interpretation and rehabilitation planning.

7208- Clinical Experience in Speech and

8208. Language Disorders. (1).

Supervised clinical practice with clients. Designed to meet student's individual needs. May be repeated for up to 6 hours.

7210- Seminar in Speech Pathology. (3).

8210. Study of selected areas of speech or language disorders. With different content may be repeated for up to 6 hours at the 7000 level or for up to 12 hours at the 8000 level.

7300- Language Disorders in Children. (3).

8300. Study of the linguistic and neurological aspect of behavior relative to disorders of language in children. In depth review of etiology, assessment and treatment.

02- Aphasia. (3).

02. Study of the language behaviors associated with aphasia in adults with emphasis on etiologies, symptoms, rehabilitative procedures.

04- Seminar in Language Disorders. (3).

04. Study of the current experimental and clinical research of disorders of language. PREREQUISITE: Permission.

05- Learning Disabilities. (3).

05. Critical study of the dysfunctions in the analysis and synthesis of sensory information including auditory, visual and haptic processing. Disturbances in symbolic operations are also discussed. Research, assessment and treatment of language and perceptual disorders with special application to the speech pathologist.

06- Laryngectomy. (3).

06. Study of literature and procedures for rehabilitative programs for laryngeal voice production. Emphasis is medical, psychological and physiological changes in the laryngectomized. Lecture and laboratory.

07- Speech and Language Assessment II. (3).

07. Interpretation of diagnostic findings leading to clinical decision-making, rehabilitative planning, and reporting. Following this course students obtain clinical experience in diagnosis of clients at the Speech and Hearing Center. PREREQUISITES: AUSP 7207-8207.

01- Therapeutic Communication in Speech

01. Pathology and Audiology. (3).

A study of theory and practice of therapeutic communication with application to persons with communicative disorders. Application to various types of clinical situations are explored. Students have the opportunity to study their own clinical behavior with special reference to their communicative relationships.

02- Organization and Administration of

02 Clinical Programs. (3).

Exploration of administrative structures applicable to the variety and scope of clinical programs in Speech Pathology and Audiology. Emphasis is placed on possibilities for organizing, administering, and conducting such clinical programs, with special emphasis on those in schools. PREREQUISITE: Permission.

7403- Parent Counseling. (3).

8403. Study of literature pertaining to parents of children with communication disorders, emphasizing therapeutic and/or education approaches. Observations of the types of parent contact applicable to speech pathologists and audiologists. PREREQUISITE: 7007 or 7401.

7404- Communication Centered Therapy. (3).

8404 Investigation of theoretical bases of a communication-centered approach to speech and language therapy and its clinical application. Readings and experience will include use of conversation units in speech and language activities, communicative play, and role playing.

7990. Special Projects. (3).

Geared to individual needs of students who wish to explore an area with faculty guidance. Students may pursue a pilot study. May be taken twice. PREREQUISITE: Permission of individual faculty members to be involved.

†7996.M.A. Thesis. (3)

8200. Individual Readings, Speech Pathology. (3).

Independent study of literature in an area of speech pathology. May be repeated as often as desired.

8221. Individual Projects, Speech Pathology. (3).

Students pursue individual research projects under the direction of a member of the graduate faculty in speech pathology. May be repeated as often as desired.

8228. Clinical Supervision in Speech Pathology. (1).

Study of processes involved in supervision of student clinicians in speech and language assessment and therapy. Experiences in supervision of M.A. level student clinicians are provided.

8209. Internship in Pediatrics. (6).

Students have an intensive lecture and conference program. They rotate through the pediatric clinic as active members of interdisciplinary diagnostic and therapeutic teams.

9000. Dissertation. (9-12).

†Grades of S, U, or IP will be given.

BIOLOGY

PROFESSOR CARL DEE BROWN, *Chairman**Room 201, Life Sciences Building*

Students selecting an advanced degree with a major in Biology will select either Botany, Cell Biology, Invertebrate Zoology, Microbiology, or Vertebrate Zoology as the area of concentration.

Master's Degree (see general regulations of the Graduate School) Departmental requirements consist of:

- A. Biology 7000, 7200, 7600, and 7996 are required of all those who major in biology. Attendance in seminar is mandatory during each semester after which 12 hours have been accumulated with credit being earned in Biology 7200 in the penultimate semester of residence and credit for Biology 7600 during the last semester.
- B. Based on the 4 point system, a student must maintain a grade point average of 3.0. Continuation of a student who makes a C or below is at the discretion of the Student's Graduate Committee.
- C. A reading knowledge of one foreign language is required.
- D. Written examination, required of all graduate students; covering subject matter designated by advisory committee, will be administered once each semester and once during the first and second summer term on a date published by the department chairman.
- E. Presentation of research (7600) and a thesis (7996) as approved by the student's major professor.
- F. Final oral examination.

Biology may be used as a collateral area provided the student has the necessary undergraduate requirements. When a student is enrolled in the INTERDISCIPLINARY MASTER OF SCIENCE program, bona fide graduate credit will be given only to those courses which are open to all graduate students.

Ph.D. Degree (see general regulations of The Graduate School) Departmental requirements consist of:

- a. Course requirements—A minimum of three (3) academic years beyond the baccalaureate degree which represents no less than thirty-six (36) hours of course work excluding Research and Dissertation (Biology 9000). A minimum of thirty (30) semester hours beyond the master's degree must be taken in residence. Biology 8001 is required as well as active seminar participation.
- b. Admission—The prospective doctoral student must hold a master's degree from a recognized institution and will be required to submit scores of the Aptitude and Advanced Placement Test of the Graduate Record Examination with application to enter The Graduate School, or he must take the tests before completion of his first semester of graduate school.

- c. Foreign Language—The prospective candidate shall be required to demonstrate a reading knowledge of two modern foreign languages. Those languages accepted without restriction are French, German, and Russian. The Graduate School, at the recommendation of the candidate's committee, may allow substitution of another foreign language when such substitution will enhance the research and scholarly interests of the student.

Substitution of statistics, computer techniques, or some other research tool in lieu of one of the modern foreign languages is at the discretion of the student's committee with the approval of The Graduate School.

Foreign students who utilize their native tongue to satisfy the language requirement as stated above must pass the English Proficiency Examination which is registered at this institution.

- d. Preliminary Examination and Candidacy—After two years of course work the graduate student may take the written and/or oral preliminary examination in his major area. On the basis of the results of the examination, the student's committee shall make a recommendation to admit or not to admit the student to candidacy. The committee will also determine the feasibility of the dissertation project at this time.

Admission to candidacy will be recommended to The Graduate School by the student's committee upon the satisfactory completion of the language requirements, the course work, completion of preliminary examinations and acceptance of the dissertation project.

- e. Dissertation and Research Prospectus—A dissertation will be required of all candidates for the doctorate. A minimum of eighteen (18) hours of research and dissertation credit must be scheduled during the graduate program. The dissertation must show a mastery of the techniques of scientific research, and it must be a distinct and new contribution to the body of scientific knowledge.

The student's committee must approve the topic of the prospectus and the final dissertation.

- f. Final Examination—The final examination will be conducted by the chairman of the student's committee. The committee will consist, insofar as possible, of the same persons involved in the preliminary examinations. The examination will be a defense of the dissertation and may be written and/or oral as the committee sees fit. Upon successful completion of the examination and all degree requirements, the chairman and the committee will recommend awarding the Ph.D. by The Graduate School.

050. Salt Marsh Ecology. (4).

A study with emphasis on the botanical aspects of local marshes; includes plant identification, composition, structure, distribution, and development of coastal marshes. **PREREQUISITE:** Ten hours of biology including introductory botany.

051. Marine Ecology. (5).

A consideration of the relationship of marine organisms to their environment, includes the effects of temperature, salinity, light, nutrient concentration, currents and food on the abundance and distribution of marine organisms. **PREREQUISITES:** General botany, invertebrate zoology, analytical chemistry.

060. Limnology. (4).

Physical and chemical attributes of lakes, ponds and streams; organisms of fresh water; problems of production; laboratory work emphasizes Tennessee lakes, and practical training in limnological methods and identification of organisms. **PREREQUISITE:** Biology 1600, and one year of chemistry.

Two lecture, four laboratory hours per week.

080. Radiation Biology. (3).

The origin and characteristics of ionizing radiations with a detailed discussion of radiation effects upon life processes from the molecular to the ecosystem level. **PREREQUISITES:** Chemistry 3311 or 3312; Biology 3070.

Two lecture, two laboratory hours per week.

100. Organic Development. (3).

The consideration of the theoretical and scientific evidences concerning the origin, development, and establishment of the major groups of living and extinct animals and plants. **PREREQUISITE:** One year of biology. Recommended for biology majors and general students as well.

160. Histological Techniques. (4).

A study of the methods of preparing plant and animal materials for microscopic study; theories of staining and preparation of permanent mounts. **PREREQUISITE:** Biology 2000 or the equivalent or consent of instructor.

One lecture, six laboratory hours per week.

3200. Marine Botany. (4).

A survey, based upon local examples, of the principal groups of marine algae and maritime flowering plants, treating structure, reproduction, distribution, identification and ecology. **PREREQUISITE:** Ten hours of biology, including introductory botany, or consent of instructor.

225. Mycology. (4).

A study of the basic life cycles, morphology and classification of fungi. Consideration of the interaction of fungal organisms in the environment. **PREREQUISITE:** Biology 2000 or the equivalent or consent of instructor.

Two lecture, four laboratory hours per week.

6226. Phycology. (4).

A systematic and comparative study of the morphology and reproduction of algae with emphasis on the fresh water forms. Selected topics on algal genetics, algal physiology and pollution will be included. **PREREQUISITE:** Biology 2000 or equivalent or consent of the instructor.

Two lecture, four laboratory hours per week.

6231. Plant Physiology. (4).

A study of the principles of physiology and their application to the lower plant groups, exclusive of the bacteria and related forms. **PREREQUISITE:** Biology 2000 or its equivalent.

Two lecture, four laboratory hours per week.

6232. Plant Physiology. (4).

A study of the principles of physiology and their application to the living organism as a whole, with emphasis on higher plants. **PREREQUISITE:** Biology 2000 or the equivalent.

Two lecture, four laboratory hours per week.

6240. Plant Taxonomy. (4).

A study of the principles of plant taxonomy. Special attention will be given to the classification of selected vascular plant families. Lectures, laboratory and field trips. **PREREQUISITE:** Biol 3240 or permission of instructor.

Two lecture, four laboratory hours per week, with field trips.

6250. Ecology of Forests and Arable Lands. (4).

Development and structural analysis of forest types and arable lands. Regional silviculture in the United States. Autecology of important species. Field trips to be arranged. **PREREQUISITE:** Biology 3050 or consent of instructor.

Three lecture, two laboratory hours per week, and extended field trips.

6440. Pathogenic Bacteriology. (4).

A consideration of the pathogenic bacteria, the diseases caused by them, and methods for diagnosis of such diseases. Considerable attention is also given to methods for the identification of the pathogenic bacteria. **PREREQUISITE:** Biology 3500, with organic chemistry desirable.

Two lecture, four laboratory hours per week.

6444. Immunology. (4).

A study of *in vitro* and *in vivo* reactions of antigens and antibodies, hyper-sensitivities, blood groups and vaccines. **PREREQUISITES:** Biology 3500 and Chemistry 3311.

Two lecture, four laboratory hours per week.

6460. Sanitary Bacteriology. (4).

A study of micro-organisms in relation to water and sewage; disinfection and disinfectants. **PREREQUISITE:** Biology 3500 or consent of instructor.

Two lecture, four laboratory hours per week.

***6500. Marine Microbiology. (5).**

A general course designed to introduce the student to the role of micro-organisms in the overall ecology of the oceans and estuaries. Lecture and laboratory work includes sampling procedures, taxonomy of marine bacteria, mineralization, microbial fouling, pollution, and diseases of marine animals. PREREQUISITES: General microbiology and advanced general microbiology or consent of instructor.

6560. Microbiology of Foods. (4).

Microorganisms in natural and processed foods; origins, nature and effects on foods, enumeration, and the relation to health. PREREQUISITE: Biology 3500 or consent of instructor.

Two lecture, four laboratory hours per week.

***6600. Marine Vertebrate Zoology and Ichthyology. (6).**

A general study of the marine Chordata, including lower groups and the mammals and birds, with most emphasis on the fish. PREREQUISITE: Twelve semester hours of biology.

6604. Ethology. (4).

A study of animal behavior with emphasis on recent developments in the field, including history of ethology, learning, releasers, communication, orientation, instinct, biological clocks, and evolution of behavior. PREREQUISITE: Biology 1600 or equivalent.

Two lecture, four laboratory hours per week.

6620. Vertebrate Histology. (4).

Microscopic study of normal tissues and organs of the vertebrate body. PREREQUISITE: Biology 3620 or 3730.

Two lecture, four laboratory hours per week.

6630. General Endocrinology. (3).

Anatomy and physiology of the organs of internal secretion; role of hormones in metabolism and development. PREREQUISITE: Biology 3730.

Three lecture-demonstration hours per week.

6640. Field Zoology. (4).

Field study of the identification, life history, and habitat of the animals of this locality; birds and insects are omitted. PREREQUISITES: 8 semester hours of biology, including Biology 1600 or the equivalent.

Two lecture, four laboratory hours per week.

6644. Ichthyology. (4).

A study of fishes, with special emphasis upon the kinds which occur in Tennessee; collection, preservation and identification; life histories, management, and economic importance of fishes. PREREQUISITE: Biology 1600.

Two lecture, four laboratory hours per week.

6720. Vertebrate Neurology. (4).

A study of the nervous system of selected

vertebrates. PREREQUISITE: Biology 1600 or permission of the instructor.

Three lecture, four laboratory hours per week.

6740. Mammalogy. (4).

Classification, distribution, life histories, economic importance, techniques of field study, methods of collection and preservation of mammals. PREREQUISITE: Biology 3620.

Two lecture, four laboratory hours per week.

6744. Herpetology. (4).

Classification, distribution, life histories, techniques of collection and preservation, natural habitats of North American reptiles and amphibians. PREREQUISITE: Biology 1600.

Two lecture, four laboratory hours per week.

***6800. Marine Invertebrate Zoology. (6).**

A general study of the anatomy, life histories, distributions, and phylogenetic relationships of all marine phyla below the chordates; for major in zoology or geology. Laboratory and field work will be included. PREREQUISITE: Twelve semester hours of biology including general biology or zoology.

6840. Invertebrate Zoology. (4).

The invertebrate animals, exclusive of the insects. With special attention given to phylogeny, organology, and taxonomy. PREREQUISITE: Biology 1600 or the equivalent.

Two lecture, four laboratory hours per week.

6901. Field Techniques in Entomology. (4).

A course devoted to the study of field techniques used in aquatic entomology and larval taxonomy. PREREQUISITES: Biology 1600, or equivalent and permission of instructor.

Two lecture, four laboratory hours per week.

6920. Insect Morphology. (4).

A study of the form and structure of insects considering both external and internal morphology. PREREQUISITE: Biology 1600 or the equivalent.

Two lecture, four laboratory hours per week.

6930. Insect Physiology. (4).

A study of physiology as applied to the life processes of insects. PREREQUISITE: Biology 2000 or the equivalent.

Two lecture, four laboratory hours per week.

6940. Aquatic Entomology. (4).

A survey of the orders of insects having aquatic and/or semiaquatic members with primary emphasis on their classification and with secondary emphasis on their biologies, habitats, etc. (A collection is required.) PREREQUISITE: Biology 3900 and 3940 or permission of the instructor.

Two lecture, four laboratory hours per week.

00. Seminar in Biological Literature. (2).

Sources of literature in the field of biology and experience in the utilization of such sources in biological research. Class reports and term papers required. Required of all students as prerequisite for writing a thesis.

01. Unifying Principles of Biology. (4).

01 A study of the principles of biology from contributions of all major fields of science. Required as a basic course for all candidates for the doctoral degree as early in their program as possible. **PREREQUISITE:** Student must be pursuing a doctoral program in the department, or if a master's candidate, must have permission of the instructor.

10. Principles and Methods of Systematic**10. Zoology. (3).**

A consideration of systematic philosophies and the numerical methods developed to deal with systematic and taxonomic problems along with discussions of international rules, concept of species, and the roles and aims of practicing systematists. Class members will conduct projects designed to give them practical experience in analyzing data. **PREREQUISITE:** Biology 2000 or consent of instructor.

Two lecture and two laboratory hours per week.

30. Cytology. (4).

30 Detailed studies of the functions and composition of individual cellular components, nuclear-cytoplasmic relationships, chromosomal variations and their genetic expression in plants. **PREREQUISITE:** Biology 1200 and 1600 or equivalent.

Three lecture, two laboratory hours per week.

31. Cellular Physiology. (4).

A study of the fundamental unit of all living things. The basic activities of cells are investigated - nutrition, adaption, growth, and reproduction. **PREREQUISITE:** Biology 3070.

Two lecture, four laboratory hours per week.

70. Cytogenetics. (4).

70 A discussion of current theories concerning the nature of the gene and the mechanisms of recombination and mutation. A detailed study of chromosome aberrations and their genetic behavior. **PREREQUISITE:** Biology 3070.

Two lecture, four laboratory hours per week.

091. Special Problems. (4).

Qualified students may be given special problems which they will investigate. The investigations will be pursued under the supervision of a member of the graduate staff and reported in the form of a written paper.

092. Research. (2-4).

The student through consultation, reading, and laboratory work will investigate selected topics in some phase of biology. A formal paper giving a review of the literature and the results of the investigation will be required.

***†7093. Problems in Zoology. (3-6).**

Supervised research on specific problems in marine zoology for graduates. **PREREQUISITE:** Zoology 6800 or 6600.

7100. Instrumentation. (2).

A consideration of recent developments in biological techniques which may be applied in the study of living organisms.

Two lecture hours per week.

7101. Electron Microscopy. (4).

An introduction to the use of the electron microscope, the preparation of microscopic specimens and techniques involved. **PREREQUISITE:** Consent of instructor.

Two lecture, four laboratory hours per week.

7111. Statistics in Biology. (3).

8111. A fundamental methods course in experimental statistics for biologists. Emphasis is placed upon calculation procedures appropriate to the biological interpretation of research measurements in their statistical context. The first semester considers the basic binomial and normal distributions and the Chi-square distribution for testing significance. **PREREQUISITES:** Mathematics 1112, 1212 or 2321.

Two lecture, four laboratory hours per week.

7112. Statistics in Biology. (3).

8112. Continuation of Statistics in Biology 7111. This semester considers the T and F distributions for testing significance and for interval estimation, the basic experimental designs, the analysis of variance and simple linear regression. **PREREQUISITES:** Statistics in Biology 7111.

7130. Comparative Animal Physiology. (4).

8130. An analysis of the physiological mechanisms of animal adaption and their relevance to evolution, distribution and survival in diverse environments. **PREREQUISITES:** An upper division course in physiology and organic chemistry.

Two lecture, four laboratory hours per week.

7170. Population Genetics. (4).

8170. Mutation, migration, selection, behavior and maintenance of variability as they affect the genetic structure of natural populations. **PREREQUISITE:** Biology 3070 or equivalent.

Two lecture, four laboratory hours per week.

†7200. Seminar in Biology. (1).

(Open to Biology majors only.) A consideration of selected topics in the biological sciences. Credit is earned when an approved topic is presented to the department prior to the final semester in residence.

7222. Advanced Morphology of the Flowering**8222. Plants. (4).**

Studies in the origin, development, embryology and embryogeny, anatomy and vascularization of organs of flowering plants. Includes comparative studies of micro- and megasporogenesis and micro- and megagametophyte development,

pollination and fertilization. Palynology is studied in light of its economic importance from the standpoint of anthropological and health studies. **PREREQUISITES:** Graduate standing. Biology 1200, 3221 or 3222 or consent of the instructor. *Two lecture, four laboratory hours per week.*

7250- Advanced Plant Ecology. (4).

8250. Consideration of plant distribution on a world-wide and a local basis with emphasis on the factors influencing plant distribution and growth. **PREREQUISITE:** Biology 3050 or consent of the instructor. *Two lecture, four laboratory hours per week.*

7321- Advanced Mycology. (4).

8321. Structure, classification, and life histories of selected groups of fungi, with investigations of genetics, phytopathogenicity, physiology, and reproduction. **PREREQUISITE:** Biology 3221 or consent of instructor. *Two lecture, four laboratory hours per week.*

7330. Intermediary Plant Metabolism. (3).

A detailed study of the metabolism of carbohydrates, fats and nitrogen compounds in higher plants. **PREREQUISITES:** Biology 2000, or equivalent, and Chemistry 3312, or equivalent, or permission of instructor. *Three lecture hours per week.*

7331- Photosynthesis. (2).

8331. Lectures and readings on modern theory of photosynthesis. Includes such topics as chloroplast structure and function; chemistry and photochemistry of chlorophyll; influence of external factors on rate of photosynthesis, absorption, fluorescence, and luminescence; energy storage; efficiency; carbon fixation; photosynthesis in cell extracts; phosphorylation. **PREREQUISITES:** Biology 1200, 6231, 6232, 7330.

7450- Microbial Ecology. (3).

8450. A physiological biochemical approach to microbial ecology employing techniques of microbiology and molecular biology as applied to ecological problems which affect the quality of our environment. **PREREQUISITE:** Biology 3500; Chemistry 3312 or consent of instructor.

7500- Virology. (4).

8500. Introduction to the viruses. Principles of methodology concerning origin, development, classification, and propagation. **PREREQUISITE:** Biology 3500 and organic chemistry. *Three lecture, two laboratory hours per week.*

7530- Bacterial Physiology. (4).

8530. A survey of bacterial physiology including growth, nutrition, biosynthesis, and adaptation. **PREREQUISITES:** Biology 3500, or its equivalent, and at least one year of chemistry. *Three lecture, two laboratory hours per week.*

7560- Industrial Microbiology-Biodeterioration. (4).

8560. A study of microbial deterioration activities of industrial importance. **PREREQUISITE:** Biology 7530 or permission of instructor. *Two lecture and four laboratory hours per week.*

7561- Industrial Microbiology-Fermentation. (4).

8561. A study of microbial fermentations resulting in the production of alcohols, acids, antibiotics, vitamins, steroids, amino acids, and other industrially significant materials. **PREREQUISITE:** Biology 7530 or permission of instructor. *Two lecture and four laboratory hours per week.*

†7600. Seminar in Biology. (1).

A consideration of selected topics in biological sciences. Credit is earned when student presents the results of his thesis research. **PREREQUISITE:** Biology 7200.

7720- Mammalian Anatomy. (5)

8720. Advanced study of the morphological features of a representative mammal. **PREREQUISITE:** Biology 3620 or permission of instructor. *Two lecture, six laboratory hours per week.*

7730- Mammalian Physiology. (5).

8730. A concentrated investigation of the functional activities of a typical mammal. **PREREQUISITES:** Biology 3730 and Biology 3620. *Two lecture, six laboratory hours per week.*

7750- Animal Ecology. (4).

8750. Relationship of animals to their environment with special emphasis upon population dynamics and ecological relationships at the population level. **PREREQUISITES:** Biology 3730 and 1600. *Two lecture, four laboratory hours per week.*

7840. Protozoology. (4).

A survey of the free living and parasitic protozoa with consideration given to structure, taxonomy, habitat, and life history. **PREREQUISITE:** Biology 1600 or the equivalent. *Two lecture and four laboratory hours per week.*

7844- Advanced Parasitology. (4).

8844. An advanced course in animal parasitology with emphasis on techniques and experimental approaches in parasitology. **PREREQUISITE:** Biology 3800 or consent of instructor. *Two lecture, four laboratory hours per week.*

7848- Fresh Water Invertebrate Zoology. (4).

8848. A study of the life-histories, ecology, classification of the fresh-water invertebrates exclusive of protozoans and insects. Techniques of collection and preservation are stressed in preparation of a representative collection. **PREREQUISITES:** Biology 1600 or equivalent, Biology 4840 or 6840. *Two lecture, four laboratory hours per week.*

7920- Advanced Insect Morphology. (3).

8920. Comparative studies of selected insect groups. **PREREQUISITE:** Biology 3920 or the equivalent. *One lecture, four laboratory hours per week.*

7930- Advanced Insect Physiology. (3).

8930. A detailed study of the physiology of various organ systems of insects. **PREREQUISITE:** Biology 3930 or the equivalent. *One lecture, four laboratory hours per week.*

3940- Advanced Systematic Entomology. (4).
3940. The principles of insect nomenclature with emphasis on procedures, rules, and the International Code will be included. Intensive study is made of specific insect groups. **PREREQUISITE:** Biology 3940, or its equivalent.
One lecture, six laboratory hours per week.

3941- Classification of Insect Larvae. (3).
3941. A survey of the holometabolous orders of insects with primary emphasis on the classification of the larval stages of these insects, and with secondary emphasis stressing larval habitat, collecting larvae and techniques of rearing larvae. A student collection will be required. **PREREQUISITES:** Biology 3900 and 3940; 3930 strongly recommended.
One lecture, four laboratory hours per week.

3960- Applied Entomology. (4).
3960. The identification, ecology, and distribution of special insect groups are studied. Principles and methods of chemical and biological control, mode of action of pesticides and their effect on the environment is included. **PREREQUISITE:** Biology 3940 or 3960, or permission of the instructor.

†9996.Thesis. (6).

All students majoring in Biology must write a thesis based on research done under the supervision of his major professor.

†9000.Doctoral Research and Dissertation (1-10).

The dissertation must be an independent research project applying a mastery of the techniques of scientific research. It must be a distinct and new contribution to the body of scientific knowledge and be published or accepted for publication wholly or in part in a recognized journal acceptable to the student's committee. Minimum total of 18 hours is required.

*These courses are taught at the Gulf Coast Research Lab, Ocean Springs, Mississippi, Memphis State University residence credit is given through affiliation with the laboratory.

†Grades of S, U, or IP will be given.

BUSINESS ADMINISTRATION

The course listed below is designated with "BA" numbers in order that it may be available to any graduate student with a major in the College of Business Administration. It will be accepted toward the completion of the degree requirements.

3000. Practicum in Research. (1-3)

A variable-credit course designed to expose the

student to actual problem-solving research activities in business and economics. Each student is assigned to a project that is either being conducted currently by a faculty member or one that is developed under the supervision of a faculty member. Whenever possible the project will be within the student's major field of study. **PREREQUISITE:** Graduate student.

BUSINESS EDUCATION AND OFFICE MANAGEMENT

PROFESSOR CHARLES EDWIN REIGEL, *Chairman*

Room 300A, The College of Business Administration Building

the Department of Business Education and Office Management, students may select from several programs as follows:

Master of Education — Business Education — This program is designed for individuals who already hold a secondary school teaching certificate. If a candidate does not hold a professional teacher's certificate, he will be required to complete the requirements necessary to meet certification standards prior to admission to graduate study.
Requirements are:

Business Education — 15 semester hours including BUED 7670 taken during last half of program.

Office Management — 9 semester hours

Education Core — EDPS 7112 or 7121, EDFD 7001, EDRS 7521

Minimum total 33 semester hours

B. Master of Education — Business Education* — This program is designed for individuals who have an interest in working in educational-instructional settings or who desire to teach in an institution not requiring secondary certification. It is not open to certified teachers or available to secondary school teachers seeking certification. Admission requirements are the same as those for the regular M.Ed. — **Business Education —** program except that no secondary teaching certificate is required. Prerequisites for admission to the program are 6 semester hours of course work at the upper division

undergraduate or graduate level in psychological, historical, sociological, or philosophical foundations. Requirements are the same as outlined in A above. Minimum total: 33 semester hours, excluding prerequisites.

- C. Education Specialist — Curriculum and Instruction (Business Education) — Requirements: 33 semester hours in the major concentration (including EDUC 8000 or 8001), EDFD 8001, EDRS 7521, 8541, one elective in EDFD, EDPS 8121, EDUC 8401, and 15 semester hours outside the College of Education. Additional information pertaining to the specific course requirements in the major and collateral areas may be secured from the Department of Business Education and Office Management. Minimum total: 66 semester hours of graduate credit with a minimum of 9 semester hours selected from courses numbered 8000 or above.
- D. Doctor of Education — Curriculum and Instruction (Business Education) — Requirements: 45 semester hours in the major concentration (including EDUC 9000), EDFD 8001, EDRS 6511, 7521, 8541, 8522 or 8542 or 8543, EDUC 8401, 8950, MGMT 6750, EDPS 8121, 6 semester hours of electives in SCED, EDUC, EDPS, or EDFD and 21 semester hours outside the College of Education. Additional information pertaining to the specific course requirements in the major and collateral areas may be secured from the Department of Business Education and Office Management. Minimum total: 99 semester hours of graduate credit with a minimum of 21 semester hours selected from courses numbered 8000 or above.

*NCATE does not accredit programs for non-certified personnel nor programs in higher education.

BUSINESS EDUCATION (BUED)

7610. Principles, History, and Philosophy of Vocational Business Education. (3). (Formerly Principles and Philosophy of Vocational Education.)

History, principles, philosophy, and objectives of vocational business education. Special emphasis given to curricular problems in office education, contribution and relation to general education and to vocational education

7620- Organization and Supervision of Vocational 8620. Business Education. (3). (Formerly Administration and Supervision of Vocational Education.)

Survey of office occupations programs with special emphasis on types of curriculums, production laboratories, and cooperative programs. Classroom supervision, physical layout, administration of programs, and utilization of block time.

7630- Improvement of Instruction in Secretarial 8630. Business Subjects. (3).

A critical evaluation of content, visual aids, methods and testing in typewriting, shorthand and secretarial and office practice courses.

7640- Improvement of Instruction in Bookkeeping 8640. and General Business Subjects. (3).

A critical evaluation of content, visual aids, methods, and testing in bookkeeping and general business subjects.

7650- Teaching Office Practice, Office Machines 8650. and Punched-Card Methods in High Schools (3).

A study of content, methods and standards for courses in Office Practice in High Schools with special emphasis on the impact of automated Data Processing in the office.

7655- Materials and Methods in Vocational 8655. Education. (3).

A study of the instructional media and aids relating to vocational office education with emphasis on recent developments and research. Particular emphasis is placed on individual instruction techniques for the block-time approach to office education programs.

7660- Tests and Measurements in Business 8660. Education. (3)

Study of standardized and published tests in business education of the new trends in testing, application of sound testing theory and techniques to business education with special emphasis on evaluation of skill development, the establishment of realistic office competencies and the evolution of grading standards.

7670. Seminar in Business Education. (3).

The purpose in this course is twofold: (a) to learn the methods and techniques of evaluating significant research studies and other current business education and related literature, and (b) to evaluate the progress that has been achieved in the conclusion of such literature to guide practical school use.

7680. Research Thesis Preparation. (3).

This course is planned to offer the student practical experience in analyzing and solving typical problems in various fields of business. Emphasis is placed on research technique, report procedures, and applied presentation. The material is selected and designed to give needed supplementary guidance during thesis writing and/or problem solving in important areas other than content. An individual formal research problem is mandatory when the course is taken to complete the sequence of one in which definite research and presentation are required.

7710-18-Workshop in Business Education. (3).

8710-18. A study of some phase of the business education curriculum through the media group study; participants will have opportunity to work on content methods, techniques, materials and evaluative criteria.

- 7710-Shorthand (3)
- 7711-Typewriting (3)
- 7712-Office Practice (3)

- 7713-General Business (3)
 - 7714-Bookkeeping (3)
 - 7715-Evaluation (3)
 - 7716-Guidance (3)
 - 7717-Supervision and Administration (3)
 - 7718-Curriculum (3)
- not more than 9 hours of workshop courses in Business Education can be applied toward a Master's Degree.)

720- Guidance in Business Education. (3).
720. History, principals, and philosophy of guidance in business education; relationships of business teacher to school guidance services; special attention directed to the development, scope, and responsibilities for vocational guidance with respect to selection and retention of vocational students.

740-Problems in Business Education. (1-6).
740. Directed independent research projects in an area selected by the student with the approval of the staff member supervising. **PREREQUISITE:** Approval of supervising teacher and departmental chairman.

7996.Thesis. (3-6).
 Application for writing a thesis must be filled out on an approved form after consultation with the major professor and filed with the Dean of The Graduate School.

800. Analysis of Research in Business Education. (3).
 A study of research techniques and findings as exhibited in representative investigations in business education. Emphasis is on reading and interpreting research, research findings as implications for solving educational problems, and recognizing potential topics for needed future research. **PREREQUISITES:** EDRS 7521 Introduction to Research and EDRS 7541 Statistical Methods Applied to Education 1.

810. Issues and Trends in Business Education. (3).
 An analysis of the pertinent issues and trends in education that pertain to business as well as those issues and trends that are inherent in business education itself.

830. Curriculum Construction in Business Education (3).
 A study of the principles of curriculum construction as applied to the business education curriculum, including Federal, state, and local forces that influence the business education curriculum. The course includes a study of basic concepts, criteria to be considered in curriculum construction, the method of conducting a curriculum study, and the on-going process of evaluating the curriculum in business education. **PREREQUISITE:** EDUC 7401 Fundamentals of Curriculum Development.

OFFICE MANAGEMENT (OFMT)

6400. Data Processing for Secretaries and Educators. (3).

Introductory course in the operation and use of punch-card equipment. The course provides practice and study in key-punching, sorting, card design, flow charting, systems analysis, and special applications relating to school and office. Laboratory experience on both unit record equipment and computing is provided.

6410. Office Management. (3).
 Modern Methods used in office organization and management, scientific office management, office reports, office correspondence, calculating and checking, filing, records retention, duplicating, handling the mail, planning procedures, planning for equipment, office machines, automation, planning for office space, physical working conditions and office layout. Fall semester.

7000. Supervised Work Experience for Teachers of Vocational Business Subjects. (3).

Practical experience in relating theory and practice in the business laboratory surrounding the University and the metropolitan area of Memphis. A student enrolled in this course will be unable to take courses other than evening or Saturday courses because the major portion of his time will be devoted to the activities involved in employment in an actual business position. **PREREQUISITE:** Permission of instructor. Summers only.

7420- Problems in Office Management. (3).
8420. Problems in actuating office employees and controlling the work of the office. Topics: Motivating Office Personnel; Job Evaluation; Recruiting and Training Office Employees; Office Supervision; Standards and Standardization; Quantity and Quality Control; Improving Procedures; Simplification; Office Forms; Measuring and Timing Office Work; Office Manuals; Office Costs and Budgets.

7530- Executive Communications. (3).
8530. Methods and techniques of communication are critically examined through the writing of case problems in correspondence with emphasis placed upon principles and correct writing and in reports with importance placed upon the collection, analysis, organization, and presentation of authentic data. The course is primarily designed for the student who has had no basic study in either business correspondence or business report writing on the undergraduate level. (Fall and Summer).

8410. Office Management Systems and Procedures. (3).
 Study of the systems approach to decision making in office management. A familiarization with general planning models, concepts of systems theory, and their application to selected office management problems. **PREREQUISITE:** BUED 7420 Problems in Office Management.

8430. Internship in Office Management. (3).

A course designed to supplement the theoretical aspects of office management by providing practical experience to students of office management. The student will have an opportunity to observe and participate in a variety of office situations under guidance of practitioners. **PREREQUISITE:** BUED 8410 Office Management Systems and Procedures.

8540. Advanced Business Communication. (3).

In-depth analysis of some major areas relating the communicating of facts and ideas in business with special opportunity for the development of individual talents. **PREREQUISITE:** OFAD 35 Office Communication or BUED 7530 Executive Communication.

†Grades of S, U, or IP will be given.

CHEMISTRY

PROFESSOR JAMES C. CARTER, *Chairman*

Room 210, J. M. Smith Building

Graduate study in the Department of Chemistry is designed to develop a broad foundation of reasonable depth in chemistry as well as to emphasize original and authoritative research, making use of the most modern techniques and skills. Experience has shown that these goals can best be achieved by a combination of a limited number of formal courses, active participation in the research programs of senior scientists, and involvement in informal discussion groups as well as formal seminars. Only through a diverse program that meets the needs of the individual student can graduate training prepare students to assume roles of leadership in academic and industrial research, college and junior college teaching, and the interdisciplinary demands of industrial and government laboratories.

Areas of concentration for the master's and doctor's degree with a major in Chemistry are inorganic, analytical, organic, physical and biochemistry. Related courses may be taken in other departments including physics, mathematics, geology, and engineering and in fields other than the student's major within the Department of Chemistry.

Detailed information on the current research fields of members of the chemistry department faculty is given in a booklet available from the departmental office.

Graduate students who express an interest in going into the teaching profession are required, as a part of their professional training, to participate in the duties of the department as Teaching Assistants, the extent of this training to be determined by the Advisory Committees, the needs of the department, and the funds available.

Prospective students, in addition to meeting the requirements for admission to The Graduate School, are required to present as a prerequisite for admission a satisfactory record of undergraduate work in chemistry; normally 32 semester hours of chemistry will be required. Students who are deficient in undergraduate work may be admitted and the deficiencies removed without graduate credit. Candidates for admission are expected to have taken the Graduate Record Examinations so that their scores may be submitted along with their applications. Students who are unable to take this examination before entering will be required to do so at the first opportunity after enrolling.

6220. Instrumental Methods. (3).

Theory and application of the principles of electrometric, spectrometric, and chromatographic methods to the collection and interpretation of physical chemistry data; the applications of such methods to analysis; and study of basic aspects of chemical instrumentation. Experimental techniques studied include advanced portions of electrochemistry; work in the UV, visible, IR, and NMR regions of the electromagnetic spectrum; gas chromatography and instrument design. **PREREQUISITE:** Chemistry 3412.

Two lecture, six laboratory hours per week.

6511. Biochemistry. (4).

Chemistry of amino acids and proteins as related to their properties in biochemical systems. Enzymology, including kinetics and conformation studies. Coenzymes and their functions. The chemistry of carbohydrates, lipids and nucleotides. **PREREQUISITE:** Chemistry 3312.

Three lecture, three laboratory hours per week.

6512. Biochemistry. (4).

A continuation of Chemistry 6511. Metabolism of carbohydrates, amino acids and nucleotides. Biochemistry of DNA and RNA, including the relationship to the biosynthesis of proteins. Metabolic control. **PREREQUISITE:** Chemistry 6511.

Three lecture, three laboratory hours per week.

6900. Chemical Literature. (1).

Use of chemical literature and the writing of technical reports.

7060. Selected Topics in Chemistry. (3).

This course, designed for high school teachers, may include various topics illustrating the principles of modern chemistry and the

applications in the areas of analytical, organic, physical chemistry, and biochemistry as required by student demand. This course cannot be applied toward a major or minor in chemistry or physics. It may be repeated for a maximum of 12 hours credit. PREREQUISITE: Permission of instructor.

Three lecture hours per week.

7111- Systematic Inorganic Chemistry. (3).

8111. A survey of inorganic chemistry, including electronic structure, bonding, stereochemistry, symmetry, and the physical and chemical properties of the elements and their compounds.

7112- Structural Inorganic Chemistry. (3).

8112. A study of physical methods used to determine structure, and applications of group theory to chemical problems.

7113- Inorganic Preparations. (1-3).

8113. Laboratory preparation, purification, and characterization of unique and/or highly reactive inorganic compounds.

7211- Systematic Analytical Chemistry. (3).

8211. Discussions of classical and modern methods of analysis in terms of scope, applicability, and limitations. Included are method selection based on sample size and constitution, data evaluation, and current research in analytical methods.

7213- Spectrochemical Methods of Analysis. (3).

8213. A study of methods of analysis based on interaction of matter with electromagnetic radiation. Included are the methods based on the Beer-Lambert Law, ultra-violet, visible and infrared spectroscopy, as well as mass spectrometry, X-ray diffraction and fluorescence, and electron diffraction. PREREQUISITE: Permission of instructor.

7311- Organic Reaction Mechanisms. (3).

8311. An introduction to the study of mechanisms of reactions of organic substances.

7312- Advanced Synthetic Organic Chemistry. (3).

8312. Principles of synthesis of complex organic substances, with an introduction to the interpretation of spectral data in the structural assignment of reaction products.

7330- Organic Preparations. (3).

8330. Utilization of the laboratory techniques employed in organic synthesis as illustrated by the preparation, purification, and characterization of organic compounds.

7411- Chemical Thermodynamics. (3).

8411. A classical thermodynamic study of chemical systems.

7412- Chemical Kinetics. (3).

8412. Theory of homogeneous reactions, theory of absolute rates, homogeneous, and heterogeneous catalysis, and mechanisms of reactions.

7414- Quantum Chemistry. (3).

8414. Discussion of the Schrodinger equation, and its solution in simple cases, application of group theory and theory of molecular bonding. PREREQUISITE: Permission of instructor.

7511- Advanced Biochemistry. (3).

8511. An advanced treatment of the physical and chemical properties of compounds of biological interest. PREREQUISITES: Chemistry 3312 and 3412, or permission of instructor.

7512- Advanced Biochemistry. (3).

8512. A continuation of Chemistry 7511-8511 with emphasis on metabolic pathways and their control. PREREQUISITE: Chemistry 7511-8511 or permission of instructor.

7513- Experimental Methods in Biochemistry. (3).

8513. An introduction to modern biochemical laboratory techniques including the isolation and characterization of nucleic acids, enzymes, and metabolites. The application of colorimetry, chromatography, centrifugation, electrophoresis, and radioisotope techniques will be discussed. PREREQUISITE: Permission of instructor.

†7910-Special Problems in Chemistry. (3-12).

8910. Individual investigation and report under the guidance of the student's major adviser.

†7913-Chemistry Seminar. (1).

8913. Formal meetings, presentation, and discussion of current topics of interest. Students, faculty and visiting scientists participate. Required of all regularly enrolled graduate students. May be repeated for a maximum of 3 credits.

†8000.Research and Dissertation/Thesis. (1-6).

An original investigation undertaken with the supervision of a member of the graduate staff. The investigation will be the basis of a dissertation or thesis.

†8100.Special Topics in Inorganic Chemistry. (1-3).

Lectures and conferences covering selected areas of current interest (including coordination, organometallic, halogen, and boron compounds, ligand field theory, and reaction mechanisms). May be repeated for a maximum of 12 hours. PREREQUISITE: Permission of instructor.

†8200.Special Topics in Analytical Chemistry. (1-3).

Lectures and conferences covering selected areas of current interest (including equilibrium, titrimetric, electroanalytical, and spectral methods, separation and radio-chemical techniques, microanalysis, statistics and data analysis, and electrode kinetics). May be repeated for a maximum of 12 hours. PREREQUISITE: Permission of instructor.

†8300.Special Topics in Organic Chemistry. (1-3).

Lecture and conferences covering selected areas of current interest (including heterocyclic chemistry, organometallic compounds, organosulfur compounds, alkaloids, steroids, terpenes, photochemistry, biosynthesis, stereochemistry, carbohydrates, new synthetic methods, high polymers, and advanced physical-organic chemistry). May be repeated for a maximum of 12 hours. PREREQUISITE: Permission of instructor.

†8400. Special Topics in Physical Chemistry. (1-3).

Lectures and conferences covering selected areas of current interest (including non-aqueous solutions, surface chemistry, X-ray crystallography, theoretical spectroscopy, nuclear chemistry, molecular structure of macromolecules, colloid chemistry, statistical thermodynamics, esr, and nmr). May be repeated for a maximum of 12 hours. **PREREQUISITE:** Permission of instructor.

†8500. Special Topics in Biochemistry. (1-3).

Lectures and conferences covering selected areas of current interest (including enzymology, protein and nucleic acid chemistry, physical chemistry of biochemical macromolecules, lipid, carbohydrate, and amino acid metabolism, biochemical energetics, and metabolic regulation). May be repeated for a maximum of 12 hours. **PREREQUISITE:** Permission of instructor.

†9000. Doctoral Research and Dissertation. (1-10).

An original investigation undertaken with the supervision of a member of the graduate staff. This investigation will be the basis of a doctoral dissertation and a contribution to the chemical literature. (Maximum amount of semester credits is 30.)

PHYSICAL SCIENCE

For the collateral area, 9 or 12 semester hours in courses approved by the Chairman of the department and the student's major professor.

6050. Glass Manipulation. (2).

A laboratory course in the fundamentals of glass manipulation and the construction and repair of simple laboratory apparatus.

Six laboratory hours per week.

6070. Physical Science for High School Teachers. (3).

A study of the fundamental principles of chemistry and physics as they relate to the understanding and teaching of these sciences in high school.

Three lecture hours per week.

6071. Physical Science for High School Teachers. (3).

A study of the fundamental principles of astronomy, meteorology, and geology as they relate to the understanding and teaching of these sciences in high school. **PREREQUISITE:** Chemistry 6070.

Three lecture hours per week.

†Grades of S, U, or IP will be given.

CIVIL ENGINEERING

PROFESSOR THOMAS S. FRY, *Chairman*

Room 104A, Engineering Building

The department of Civil Engineering offers a program leading to a Master of Science degree. Areas of concentration within the graduate program in Civil Engineering include Environmental Engineering, Foundation Engineering, Structural Engineering and Transportation Engineering.

Students who hold the degree of Bachelor of Science in Civil Engineering from an ECPD accredited institution will be admitted to full-time graduate study if their academic record warrants. Admission of all other students holding a Bachelor of Science degree will be considered on an individual basis depending on academic background and record. Students admitted in this category will be expected to take additional course work, as needed, to complete their background in basic Civil Engineering.

6121. Structural Analysis II. (3).

Analytical and numerical solutions for statically indeterminate structures. **PREREQUISITE:** CIVL 3121.

Three lecture hours per week.

6131. Intermediate Steel Design. (3).

Design of plate girders and composite beams; moment connections; building design. **PREREQUISITE:** CIVL 3131.

Two lecture hours/three laboratory hours per week.

6136. Intermediate Reinforced Concrete Design. (3)

Design of two-way slab system; integrated building design using current code provisions. **PREREQUISITES:** CIVL 4121, 4135.

Two lecture hours/three laboratory hours per week.

6142. Unit Operations and Processes in Environmental Engineering. (3)

Operations and processes in water and waste treatment; including sedimentation, coagulation, neutralization, filtration, absorption biological treatments, softening and other techniques.

Three lecture hours per week.

6146. Environmental Engineering Analysis. (3).

Quantitative measurements and bench scale pilot plant studies in the fields of water, sewage, industrial waste and stream pollution. Interpretation and application of test data. **PREREQUISITE:** CIVL 4145 or consent of instructor.

One lecture, six laboratory hours per week.

6147. Environmental Engineering Design. (3).

The design of a water and waste water treatment plant. The student's background as well as

accepted design criteria will be utilized. PREREQUISITE: Senior standing or consent of instructor.

Two lecture hours/three laboratory hours per week.

1162. Applied Soil Mechanics. (3).

Applications of theory to practical design of building foundations; retaining walls, hydraulic structures and machine foundations.

Three lecture hours per week.

1162. Traffic Engineering. (3).

The study of the traits and behavior patterns of road users and their vehicles. Includes traffic signs and signals, pavement markings, hazard delineation, capacity, accidents and parking analysis. PREREQUISITE: Approval of instructor.

Three lecture hours per week.

1164. Advanced Surveying. (3).

Elements of route location and design with emphasis on horizontal and vertical alignment, curvature, gradient and sight distance. PREREQUISITE: Civil Engineering 3111.

Two lecture, three laboratory hours per week.

1001. Engineering Analysis I. (3).

Review of mathematical methods for application to civil, electrical, and mechanical engineering; introduction to analog and digital computers.

Three lecture hours per week.

1002. Engineering Analysis II. (3).

Analysis of unsteady-state systems; lumped systems for digital computation; distributed systems for analog computation. PREREQUISITE: 7001.

Three lecture hours per week.

1012. Probabilistic Methods in Engineering. (3).

Uses of Information Theory; Symbolic Logic, Bayes Theorem, Principles of Maximum Entropy, applied to problems in reliability, decision theory and engineering design with limited data. PREREQUISITE: Consent of instructor.

Three lecture hours per week.

1111. Matrix Analysis of Structures. (3).

Matrix formulation of force and displacement methods. Code system in the displacement method and advanced programming techniques in digital computation.

Three lecture hours per week.

112. Structural Dynamics. (3).

Free vibration of lumped and distributed systems. Normal modes and their uses in finding response of structures to transient forces. Digital computation and analog simulation.

Three lecture hours per week.

1113. Advanced Reinforced Concrete. (3).

Behavior of reinforced concrete structures; ultimate strength designs. Prestressed concrete structures.

Three lecture hours per week.

7114. Advanced Steel Design. (3).

Plastic analysis and design of metal structures; application to multiple-story steel structures.

Three lecture hours per week.

7115. Plate and Shell Structures I. (3).

Analysis and design of cylindrical shell and folded plate structures; translation shell of double curvatures. Computer applications. PREREQUISITE: Consent of instructor.

Three lecture hours per week.

7116. Plate and Shell Structures II. (3).

Membrane and bending stresses of shells of revolution; design of domes and shell walls; buckling of shells. Computer applications. PREREQUISITE: Consent of instructor.

Three lecture hours per week.

7117. Finite Element Methods in Structural Mechanics. (3).

Structural idealization, stiffness properties of elements, structural analysis of element assemblage. Plane stress and strain problems. Applications to problems of plates and shells. Computer solution of large systems. PREREQUISITE: Consent of instructor.

Three lecture hours per week.

7131. Foundation Engineering. (3).

Critical study of foundation design of completed projects using case records; emphasis on failures and performance records.

Three lecture hours per week.

7132. Advanced Soil Mechanics. (3).

Basic theory and status of current research; applications to foundation problems.

Three lecture hours per week.

7133. Dynamics of Bases and Foundations. (3).

Design of foundations against impact and forced vibrations.

Three lecture hours per week.

7134. Flow Fluids Through Porous Media. (3).

Fluid seepage and underflow problems; filtration; groundwater flow.

Three lecture hours per week.

7141. Advanced Water Treatment. (3).

An indepth probe of the theory and practices of domestic and industrial water treatment. Surface as well as subsurface sources will be considered. Water exploitation and depletion will be touched on as well as treatment processes. PREREQUISITE: Consent of instructor.

Three lecture hours per week.

7143. Solid Waste Management. (3).

A study of the existing and future solid waste collection systems and disposal techniques. Resources recovery and energy conversion will be emphasized as well as land disposal of solid wastes from domestic and industrial sources. PREREQUISITE: Consent of instructor.

Three lecture hours per week.

7144. Air Pollution Analysis and Control. (3).

A study of atmospheric emissions; sources quantities, regulations, and control devices. PREREQUISITE: Consent of instructor.

Three lecture hours per week.

7145. Advanced Waste Water Treatment. (3).

Critical study of the theories of waste treatment using operating processes as examples; emphasis is on basic theory of solid and liquid waste treatment. PREREQUISITE: CIVL 6146 or consent of instructor.

Three lecture hours per week.

7146. Industrial Waste Disposal. (3).

An analysis of the solid and liquid waste disposal problems of industry. In particular, unique problems such as flammable liquid wastes, toxic liquids, sludges and semi-solids will be investigated. PREREQUISITE: Consent of instructor.

Three lecture hours per week.

7147. Water Resources Engineering I. (3).

A review of the basic aspects of water resource engineering with emphasis on application of hydrology, groundwater, water law, reservoirs, dams, and engineering economy. PREREQUISITE: Consent of instructor.

Three lecture hours per week.

7148. Water Resources Engineering II. (3).

A basic introduction to open channel hydraulics. It will include an in-depth study of the energy and momentum principle of open channel flow, flow resistance in non-uniform flow computation. PREREQUISITE: Consent of instructor.

Three lecture hours per week.

7149. Water Resources Engineering III. (3).

A presentation of advanced studies in water resources engineering. The major emphasis will be on unsteady flow hydraulics, flood routing, sediment transport, stream reaeration, stream oxygen sag analysis, river basin administration, thermal pollution, thermal stratification in reservoirs, and heat balances. PREREQUISITE: CIVL 7148 or consent of instructor.

Three lecture hours per week.

7162. Transportation I. (3).

Highway and railroad engineering; planning and economics. Includes design, construction, planning, economic feasibility, and financing. Emphasis will be placed on highway and railroad transportation as regional systems. PREREQUISITE: Approval of instructor.

Three lecture hours per week.

7163. Transportation II. (3).

The planning and design of air and water transportation facilities. Items include financing, traffic control, aircraft characteristics, demand, site location, runway configuration, terminal areas and other items affecting the comprehen-

sive planning, design and operation of modern airports; and the characteristics of facilities unique to water transportation. PREREQUISITE: Approval of instructor.

Three lecture hours per week.

7164. Urban Transportation Engineering. (3).

A review of the transportation problem as it relates to the development patterns in American cities. The theory and application to engineering and socio-economic factors directed toward the formulation of models for conducting transportation studies. PREREQUISITE: Consent of the instructor.

Three lecture hours per week.

7165. Geometric Design of Transportation Systems (3).

Design of highways and streets with emphasis on capacity, intersections, channelization and parking facilities. PREREQUISITE: Civil Engineering 6164 or consent of instructor.

Three lecture hours per week.

7166. Design of Highway and Airport Pavements (3).

Design practices, materials and testing of flexible and rigid pavements. PREREQUISITE: Consent of instructor.

Three lecture hours per week.

7167. Municipal Engineering. (3).

Theory and Methodology for synthesis of general Civil Engineering aspects of urban areas. Integration of land use, conditions and capabilities and engineering economies applicable to special problems in urban development. Preparation of engineering reports and presentation methods. PREREQUISITE: Consent of instructor.

Three lecture hours per week.

7991. Projects I. (1-3).

Independent investigation of a problem selected in consultation with instructor; report required. Course cannot be repeated regardless of number of hours credit received when course is taken.

Three to nine laboratory hours per week.

7992. Projects II. (1-3).

Independent investigation of a problem selected in consultation with instructor; report required. Course cannot be repeated regardless of number of hours credit received when the course is taken.

Three to nine laboratory hours per week.

†7996. Thesis (6).

†Grades of S, U, or IP will be given.

CURRICULUM AND INSTRUCTION

ASSOCIATE PROFESSOR ROGER V. BENNETT,
Chairman

Room 424, The College of Education Building

In the Department of Curriculum and Instruction students may select from several programs as follows:

A. Master of Education — Elementary Education. Candidates must have had at least two years of teaching experience or its equivalent (to be determined by Department Chairman) before the degree is awarded. Course requirements are: EDPS 7111, EDRS 7521, ELED 7201, and EDUC 7401 or EDFD 7001, 9 semester hours of electives in Elementary Education, 9 semester hours from The College of Arts and Sciences, and 3 semester hours of free electives. Minimum total: 33 semester hours.

B. Master of Education — Reading — This program is designed for those who wish preparation as a teacher of reading. It will provide the teacher with a greater competency in meeting the individual needs of the students in his classroom. It will also provide him with the skills needed to assume the role of a remedial reading teacher or a curriculum consultant in reading at the elementary and secondary levels. Course requirements are: READ 7243, 7244, 7245, 7843, EDRS 7521, 9 semester hours of electives in reading and language arts and 9 semester hours outside the College of Education. The student's advisor will suggest electives in accordance with approved Tennessee certification requirements for special teachers of reading. Minimum total: 33 semester hours.

C. Master of Education — Elementary Education (Early Childhood). Candidates must have had at least two years of teaching experience or its equivalent (to be determined by the Department Chairman) before the degree is awarded. Course requirements are: EDPS 7111, EDRS 7521, ELED 7201 and EDUC 7401 or EDFD 7001, 9 semester hours of electives in Elementary Education, 9 semester hours from the College of Arts and Sciences and 3 semester hours of free electives. Minimum total: 33 semester hours.

D. Master of Education — *Reading. The program is designed for individuals who have an interest in clinical diagnosis and treatment of reading problems. It is not open to certificated teachers or available to elementary or secondary school teachers seeking certification. Admission requirements are the same as those for the regular M.Ed. program, except that no teaching certificate is required. Prerequisites for admission to the program are six semester hours of course work at the upper division undergraduate or graduate level in psychological, historical, sociological or philosophical foundations of education. Course requirements are: READ 7243, 7244, 7245, 7843, 9 semester hours of electives in Reading, EDRS 7521, and 9 semester hours outside the College of Education. Minimum total: 33 semester hours, excluding prerequisites.

E. Education Specialist — Curriculum and Instruction (Elementary Education) or (Reading). Requirements: 30 semester hours in the major concentration, 6 semester hours of electives in the College of Education, EDPS 8121, EDUC 8401, EDFD 8001, EDRS 7521, 8541, and 15 semester hours outside the College of Education. Additional information pertaining to course requirements in the major and collateral areas may be secured from the Department of Curriculum and Instruction. Minimum total 66 semester hours of graduate credit with a minimum of 9 semester hours in courses numbered 8000 or above.

F. Doctor of Education — Curriculum and Instruction (Elementary Education) or (Reading). Requirements: 45 semester hours in the major concentration, 12 semester hours of electives in the College of Education, EDUC 8950, EDPS 8121, EDUC 8401, EDFD 8001, EDRS 7521, 8541, either 8522 or 8542 or 8543 and 21 semester hours of collateral work outside the College of Education. Additional information pertaining to specific course requirements in the major and collateral areas may be secured from the Department of Curriculum and Instruction. Minimum total 99 semester hours of graduate credit with a minimum of 21 semester hours selected from courses numbered 8000 or above.

G. Master of Arts in Teaching — The programs for the Master of Arts degree are designed for students who hold a bachelor's degree from an appropriately accredited college or university. Programs are available for students who wish to qualify for certification in secondary school as well as for students who already hold certification. Requirements are: EDRS 7521; EDFD 7001 (7012 or 7021 or 7031 may be elected by individuals who have completed undergraduate or graduate course work in the cultural foundations); EDPS 7121 or 7112; EDUC 7401.

For candidates seeking certification, additional requirements include 6 semester hours in the teaching endorsement area, 12 semester hours in the field of study in education, including an appropriate methods course, and 9 semester hours in student teaching (SCED 6841). The student must have a well-balanced background in General Education and must have met, or will have met upon completion of the program, the undergraduate requirements or their graduate equivalents in the field of study in which the student is seeking certification. An analysis of the student's undergraduate work is prepared by the Director of Teacher Certification in the College of Education Building. Minimum total: 39 semester hours.

For students who already hold secondary school certification, additional requirements include 12-15 semester hours in the teaching endorsement area, 6-9 semester hours in appropriate courses in the field of study in education, and 3 semester hours of electives (any department), selected in consultation with advisor. Minimum total: 36 semester hours.

- H. Master of Education — Secondary Education — This program is designed for individuals who already hold secondary school certification.

Requirements are EDRS 7521, EDFD 7001 (EDFD 7012 or 7021 or 7031 may be elected by individuals who have completed undergraduate or graduate course in the cultural foundations), EDPS 7121 or 7112, EDUC 7401, an appropriate advanced methods course, 9 semester hours in the teaching endorsement area and 9 semester hours of electives, of which at least 6 semester hours must be taken in courses with SCED or EDUC prefixes, selected in consultation with the advisor. Minimum total: 33 semester hours.

- I. *Master of Education — Secondary Education — This program is designed for individuals who have an interest in working in educational-instructional settings, but who are non-public school oriented. It is not open to certificated teachers, or available to secondary school teachers seeking certification. Admission requirements are the same as those for the regular M.Ed. program, except that no secondary teaching certificate is required.

Prerequisites for admission to the program are six semester hours of course work at the upper division undergraduate or graduate level, which includes one course in the psychological foundations, and one course in either the historical, sociological, or philosophical foundations.

Requirements are: Research (EDRS 6511 or 7521 or 7541), Curriculum (EDUC 7401 or 7451 or 7531), 9 semester hours in related content fields outside the College of Education; 15 semester hours selected in consultation with the departmental advisor, at least 9 semester hours of which must be taken in Secondary Education (Courses with EDUC or SCED prefixes); and 3 semester hours of electives. Minimum total: 33 semester hours, excluding prerequisites.

- J. Education Specialist — Curriculum and Instruction, (Curriculum and Instruction), (Secondary Education), (English Education), (Music Education), (Science Education), (Social Studies Education), (Mathematics Education), *(Business Education), or *(Higher Education). Requirements: 30 semester hours in the major concentration, 15 semester hours of electives in the College of Education, a research core of 6 semester hours (EDRS 7521, 8541), and 15 semester hours in the collateral area(s) outside the College of Education. Additional information pertaining to specific course requirements in the major and collateral areas may be secured from the Department of Curriculum and Instruction. Minimum total: 66 semester hours of graduate credit with a minimum of 9 semester hours in courses numbered 8000 or above.
- K. Doctor of Education — Curriculum and Instruction, (Curriculum and Instruction), (Secondary Education),

(English Education), (Music Education), (Science Education), (Social Studies Education), (Mathematics Education), or *(Business Education). Requirements for all programs except in Business Education are as follows: 48 semester hours in the major concentration, 12-21 semester hours of electives in the College of Education, a research core of 9 semester hours (EDRS 7521, 8541, and 8522 or 8542 or 8543), and 21-30 semester hours in the collateral area(s) outside the College of Education. Additional information pertaining to specific course requirements in the major and collateral areas may be secured from the Department of Curriculum and Instruction. Minimum total: 99 semester hours of graduate credit, with a minimum of 21 semester hours in courses numbered 8000 or above.

- L. Doctor of Education — Curriculum and Instruction *(Higher Education). Requirements: 48 semester hours in the major concentration, 6-21 semester hours of electives in the College of Education, a research core of 9 semester hours (EDRS 7521, 8541, and 8522 or 8542 or 8543), and 21-36 semester hours in the collateral area(s) outside the College of Education. Additional information pertaining to specific course requirements in the major and collateral areas may be secured from the Department of Curriculum and Instruction. Minimum total: 99 semester hours of graduate credit, with a minimum of 21 semester hours in courses numbered 8000 or above.

*NCATE does not accredit programs for non-certificated personnel nor programs in higher education.

**For details concerning these programs see the Business Education and Office Management Department.

The Department of Curriculum and Instruction includes a number of areas of specialization. These are Elementary Education (ELED), Secondary Education (SCED), Reading (READ), Early Childhood (ELED), Higher Education (EDUC), Audio Visual (EDUC), and General Curriculum and Instruction (EDUC). These can each be located under the designated prefixes.

GENERAL CURRICULUM AND INSTRUCTION

EDUCATION (EDUC)

7205- Simulation and Gaming. (1-3).

8205. Surveying, analyzing and designing simulation and gaming activities appropriate for classroom situations. Emphasis will be placed on individual and group participatory activities.

7302- Preparation of Inexpensive Instructional 8302. Materials. (3).

Design and preparation of a wide variety of readily-available instructional materials. Laboratory practice is provided in applying techniques such as lettering, coloring, and mounting of illustrations and other materials in preparation of both transparent and non-transparent graphics.

7303- Utilization of Audio-Visual Media. (3).

8303. Analysis of communication theory; development of message design in utilization of multi-sensory

aids in theoretical and practical environments; projects developed and presented for class analysis; laboratory experience in media equipment; evaluation and selection of media.

7304- Programmed Instruction. (3).

8304. Theories and techniques of programmed learning applied to design, production, and evaluation of programs. Students will prepare and field test programmed materials.

7305- Survey of Communications Media. (3).

8305. Survey of communications theory in relation to motivation, persuasion, perception, and environment in instructional situations. Analysis of communications media as determinants and controls of learning.

†7307-Practicum in Instructional Media. (3-6).

8307. Designed to provide supervised experience in application of theoretical and practical solutions of various types of communication environments, dealing with problems relative to media utilization in the school. **PREREQUISITE:** Consent of instructor.

7308- Administration and Organization of

8308. Educational Media Programs. (3).

Considers problems of organizing, administering, and evaluating materials and equipment services. Emphasis on selection and evaluation of personnel, school plant requirements, expenditures, staff development and utilization, sources of materials, uses of equipment, and implementation of media programs within the school. **PREREQUISITE:** Permission of the instructor.

7309- Individualizing Instruction. (3).

8309. Analyzing various paradigms for individualizing instruction. Emphasis will be placed on designing, developing, evaluating, and managing alternative models.

7391- Teaching in the Community College. (3).

8391. This course is designed to improve the quality of classroom teaching in the community college by broadening and deepening the scope and levels of perceived needs, relationships, contingencies, and relevant competencies. **PREREQUISITE:** Permission of the instructor.

7401- Fundamentals of Curriculum Development.

8401. (3).

A study of the fundamental aspects of curriculum development and the basic issues underlying curriculum. Four significant aspects are: educational directions; ordering potential experiences; patterns of curriculum organization; and the determination of principles and procedures by which changes in the curriculum can be made, evaluated and sustained.

7431- The Middle School. (3).

8431. This course will investigate the emerging concepts of the middle school. It will study the students involved, methods utilized in the instructional process, preparation of administrators, faculty, and staff, innovations applicable to the middle school, trends in

classroom organizations and procedures, and the curriculum.

7451- Curriculum Development in the Community

8451. College. (3).

A course to develop ability to provide a relevant curriculum for the clientele of the community college. Particular attention will be given to the diverse nature of the students and the relationships of the curricular components to each other, as well as to the students. **PREREQUISITE:** Permission of the instructor.

7531- Seminar in Curriculum Improvement. (3).

8531. Analysis of varying positions as presented in significant writings influencing educational thought on curriculum. Emphasis is on procedures utilized for curriculum improvement and study of current curriculum developments in the major disciplines in grades K-12.

†7701-Workshop in Community College Curriculum (1-3).

A study of selected aspects of the community college curriculum in depth. Specific emphasis given to recent and current changes and development of the community college curriculum. Designed for short term professional growth experience for community college teachers.

†7702-Workshop in Educational Media. (1-6).

8702. Designed for in-service teachers to improve instruction in pre-school through grade twelve. Content will change as indicated by developments, problems, and individual needs in this area. **PREREQUISITES:** Teaching experience and consent of workshop instructor.

7703. Workshop in Community College Instruction. (1-3).

Consideration of innovations and unique teaching strategies for the community college. Special attention directed toward adapting specific teaching procedures and techniques to community college students.

7801- Supervision of Student Teaching. (3).

8801. This course deals with principles and techniques of supervising student teaching. It is designed for supervising teachers, administrators, coordinators of student teaching programs, and college personnel who supervise student teachers.

7991- Special Problems in Instruction. (1-3).

8991. Individual investigation and report in the area of classroom instruction under the direction of a faculty member.

7992- Special Problems in Curriculum. (1-3).

8992. Individual investigation and report in the area of curriculum development under the direction of a faculty member.

7997- Special Problems in Higher Education. (1-3).

8997. Individual investigation and report in a selected area of higher education under the direction of a faculty member.

†8000.Education Specialist Thesis. (3-6).

Individual study of a research problem, closely related to the student's field of major concentration.

†8001.Education Specialist Field Study. (3-6).

Individual study of a significant problem in a local school system. The study shall be closely related to the student's field of major concentration.

8402. Theory and Practice of Curriculum Development. (3).

An advanced course in curriculum development. Analytical and critical in approach, the course covers theoretical curriculum issues, and fundamental principles of design, patterns of organization, decision making, process and evaluation in curriculum improvement. PREREQUISITE: Education 7401, or permission of instructor.

†8452.Practicum in Community College Teaching. (3-6).

For advanced graduate students who are planning to teach at the college level. Emphasis is placed on problems, methods, and techniques of teaching in junior and community colleges through participation in seminar, with opportunities to observe college teaching as well as to teach classes under close supervision. PREREQUISITE: Permission of the instructor.

8471. Seminar in Research and Development of Educational Media. (3).

Individual and group study of professional and research problems in media. PREREQUISITE: Consent of instructor.

†8950.Dissertation Seminar. (3).

Designed to provide graduate students an opportunity to develop research studies. Based on research and statistic courses previously completed or in progress, the student will have an opportunity to expand his knowledge and use of research techniques. A dissertation prospectus is submitted for analysis before approval by the student's graduate committee. PREREQUISITES: admission to candidacy, EDRS 7521, EDRS 7541, EDRS 8521 or 8542.

†9000.Doctoral Dissertation. (3-12).

Credit may be earned over a period of several semesters. The dissertation may be an organized scientific contribution or a comprehensive analysis of theory and practice in a specific area.

ELEMENTARY EDUCATION (ELED)

6211. Comparative Study in Early Childhood Education. (3-6).

The study of programs for young children in the United States and other countries focusing on the relationship between the program and the values the society holds. Comparison of programs will be made with emphasis on how aspects of a program could be modified to meet

the needs of children from a different culture. Foreign and domestic travel may be planned in conjunction with this course. PREREQUISITE: Consent of instructor.

†6701-20.Workshops in Elementary Education.

This is a workshop for teachers who wish to improve their teaching skills. Various curriculum areas will be explored and many alternate solutions to problems of teaching will be included.

†6701.Workshop—Improvement of Instruction. (1-3).

†6702.Workshop—For Teachers of the Disadvantaged. (1-3).

†6703.Workshop—Elementary Curriculum. (1-3).

†6704.Workshop—Elementary Science Education. (1-3).

6761. Aerospace Education in Schools. (3).

The purpose of this course is to provide teachers with aerospace knowledge and experiences and ways of utilizing this knowledge and experience in the classroom.

†6811.Supervised Practicum in Kindergarten. (3-6).

(formerly Directed Student Teaching in the Kindergarten)

Observation of the growth and development of pupils and methods of teaching; participation in school activities, culminating in assuming responsibility for teaching entire groups.

†6821.Supervised Practicum in the Elementary School. (3-9).

(formerly Directed Student Teaching in the Elementary school)

Observation of the growth and development of pupils and methods of teaching; participation in school activities, culminating in assuming responsibility for teaching entire groups.

†6822.Supervised Practicum in the Elementary School. (3-6).

(formerly Directed Student Teaching in the Elementary School)

For the student who has completed six semester hours or less of student teaching in the elementary school and desires some additional experience.

7112- Parent-Teacher-Child Relationships. (3).

8112. This course is designed to develop insight into the parent-teacher, parent-child, and child-teacher relationships, to explore ways of working with parents, and to develop techniques for reporting children's progress to parents of nursery, kindergarten, and primary children. PREREQUISITE: EDPS 7111.

7113- Independent Study in Early Childhood Education. (3).

Independent investigation and report of a research problem or directed readings in a

selected area of early childhood education in consultation with a faculty member.

7201- Trends in Elementary Education. (3).

8201. Trends in classroom organizations and procedures. Innovations, approaches and directions applicable to the improvement of instruction are considered.

7211- Values and Principles of Early Childhood

8211. Education. (3).

This course is designed to study current curricula, trends and issues related to kindergarten through the primary grades. Emphasis will be placed on the principles and values of early childhood education; current research; selection, organization, evaluation of learning experiences.

7220- Field Study of Exemplary Elementary

8220. Education Programs. (3-6).

The course is designed to provide an opportunity to examine outstanding education programs through on-site visitations as well as to participate in seminars related to the supportive research.

7241. The Teaching of Children's Literature in the Elementary School. (3).

This is a course designed to improve the methods of teaching children's literature in the elementary school. Units on story telling, dramatization, choral speech work, and the correlation of literature with the content subjects will be carried out.

7242- Advancing the Teaching of Language Arts. (3).

8242. Designed to review the current research and thinking that stresses the use of language in the process of communication. Using research as a means to develop further understanding, students will develop projects in listening, speaking and writing. Special emphasis will be given linguistics and the socioeconomic influences on language.

7252- Issues and Trends in Teaching Elementary

8252. Mathematics. (3).

This course is designed to study and do research on issues and trends in teaching elementary mathematics. Such topics as experimental programs, concept of "modern math," curriculum, classroom methods and techniques, evaluation procedures, teacher training, and inservice education will be covered. PREREQUISITE: ELED 3251 or 4252.

7253- The Teaching of Intuitive Geometry in the

8253. Elementary School. (3).

Teaching of intuitive geometry as it occurs in the elementary grades. Because of the increased recognition geometry is receiving, this course provides the elementary teacher with a wide variety of activities useful with elementary children.

7254- Seminar in Elementary Mathematics

8254. Education. (3).

Specialized study and research dealing with selected problems in elementary mathematics education. Designed for teachers, supervisors, and administrators. Students are expected to do research, prepare papers, and discuss their research findings and experiences. PREREQUISITES: Teaching experience and ELED 3251 or ELED 4242.

7262. The Teaching of Science in the Elementary School. (3).

Current developments in elementary science education in both process and content. Examination of new curriculum materials and involvement in learning experiences appropriate for elementary school. Designed primarily for inservice teachers.

7263- Seminar Readings in Science Education.

8263. (3).

A survey of selected current problems and research in science education. Class members are expected to prepare papers and/or participate in discussion. PREREQUISITE: ELED 7262 or its equivalent.

7264- Elementary School Science: Curriculum and

8264. Supervision. (3).

A survey of the problems involved in the supervision of elementary science instruction and program evaluation. Special attention is given to the supervision of student teachers, inservice teachers, science workshops, inservice programs and special science programs.

7272- Current Curriculum Development in Social

8272. Science Education. (3).

Emphasis on current developments which are consistent with the needs, interests, and social problems which elementary school children face today. Each student is expected to be familiar with research, new programs and issues related to social science education.

7273- The Teaching of Social Studies in the

8273. Elementary School. (3).

Developing teaching practices with respect to the varying models of social studies curriculum in elementary education.

7311. Studying the Elementary School Child. (3).

A study of the operational tools and underlying concepts used in analyzing and diagnosing children ages 3 thru 12 with respect to their physical, social, emotional, and intellectual development with an emphasis on application of the findings in terms of individually prescribed curriculum.

7411- Curriculum Development and Techniques of

8411. Teaching Nursery, Kindergarten and Primary Children. (3).

This course is designed to investigate innovative curricula methods and techniques for teaching

nursery, kindergarten, and primary children. The subject matter areas studied are mathematics, science, social science, music, and language arts.

7421- Elementary School Curriculum. (3).

8421. An appraisal of modern curriculum practices, including emphasis on underlying philosophies, as they affect the child, his potential, and his growth.

†7701. Workshop in Family Finance Education. (1-6).

This course is designed to assist teachers in using materials, information, and techniques for improving instruction in family finance through units in regular classes. **PREREQUISITE:** Permission of instructor.

7791- Special Problems in Instruction. (1-3).

8991. Individual investigation and report in the area of classroom instruction under the direction of a faculty member.

†7996. Thesis. (3-6).

Only students with superior scholarship are permitted to register in this course. The student must present in writing an outline describing the proposed thesis. This outline, when approved by the faculty members under whose direction the thesis is to be written, must be submitted to the Chairman of the Department of Curriculum and Instruction for his approval. This course will involve writing the thesis and will emphasize the adequate setup of the problem, the collection of the data, their use, and conclusions to be reached. Application for writing a thesis must be filled out on an approved form after consultation with the major professor and filed with the Dean of The Graduate School at the time of registration.

8202. Seminar in Elementary Education. (3).

Basic concepts and programs in elementary education with special emphasis on current literature in the field.

8210. Survey of Innovative Practices in Elementary Education. (3).

A survey, evaluation and possible applications of innovative practices concerning theory and practice in the elementary school.

8215. Seminar in Early Childhood Education. (3-6).

Systematic study of current professional and research literature in the field of early childhood education.

8274. Seminar in Social Science Education. (3).

A survey of current problems in social science education.

8275. Research in Elementary School Social Studies. (3).

Review and analysis of significant research in the field of Elementary School Social Studies.

READING (READ)

†6751. Workshop in the Reading Program. (3-6).

Designed to utilize group study, discussion, demonstration, and directed practice to study problems of reading. Participants will have an opportunity to pursue their own reading related interests in content, methods, materials, and evaluation.

7243- Modern Reading Instruction. (3).

8243. Designed to survey the methods, materials, and approaches used in the teaching of reading. An in-depth analysis of one of these approaches is required of each student. This analysis will be concerned with the history, philosophy, materials, and research supporting each approach.

7244- The Diagnosis of Reading Problems. (3).

8244. (formerly 7246 Diagnostic and Remedial Reading in Elementary and Secondary Schools)

Designed to develop an understanding of the principles of measurement and evaluation in reading. It is organized to stress the formal and informal techniques used by the classroom teacher in assessing a child's reading potential. Careful consideration is given to the multiple causation approach to reading difficulties. This enables an in-depth analysis of the child, the home, the community, and the school. **PREREQUISITES:** Teaching experience and READ 7243.

7245- The Treatment of Reading Problems. (3).

8245. Designed to provide a knowledge of materials, programs, and techniques used to correct reading disabilities. Through observation and demonstration it emphasizes the corrective, remedial, and clinical approaches to the treatment of reading problems. **PREREQUISITE:** READ 7243 and 7244.

7246- Teaching Reading to Exceptional Children. (3).

8246. Designed as a problem centered course which emphasizes research and reporting on the problem of teaching reading to the exceptional child. Topics such as the bright and gifted child, the disadvantaged child, the slow learner, and the physically handicapped child will be discussed from the aspects of identification, treatment, and materials for instruction.

7247- Teaching Reading for and Through the

8247. Subject Areas (Primarily Elementary). (3).

A course to give a teacher of any subject at elementary or secondary level knowledge of reading skills necessary for most efficient study in that field, and to show how reading instruction may be concomitant with learning of the content of any discipline. Classroom diagnosis of pupils' reading skills and development of materials are aspects of the course. (Credit in this course may not apply toward a degree if the student has credit in 4344 or 6344.)

7248- Teaching Reading in the Secondary Schools.

8248. (3). Designed for teachers of the content subjects in

grades 7 through 12 with major emphasis on the role of reading in the learning process. Research and evaluation are stressed as well as an analysis of materials employed in specific reading improvement programs. There is also an emphasis on instructional methods.

7344- Teaching Reading in the Content Areas. (3).

8344. Designed to emphasize the reading skills necessary for mastery of the academic disciplines. Techniques for teaching technical vocabulary, comprehension, study skills as well as selective reading rates will be taught. Attention will be given to the younger child's first adventure into new areas of interest.

7442- Curriculum and Supervision in Reading. (3).

8442. Designed to study various curricula in the elementary and secondary school which involves reading. Specialized curricula for graded and non-graded school systems will be discussed. Students will be expected to develop and evaluate curricula for reading. PREREQUISITES: READ 7243, 7244, and 7245.

7841- Reading Clinic I. (3).

8841. Designed to provide the student with the practical experiences of clinical diagnosis. Through observation, demonstration, and actual laboratory experience the student will learn how to administer and interpret clinical instruments. Each student will be required to write a detailed case study diagnosing specific weaknesses and their probable causes. PREREQUISITES: READ 7243, 7244, and 7245.

7842- Reading Clinic II. (3).

8842. Designed to provide the student with the practical experience of working with a disabled reader in a clinical situation. Through observation, demonstration and actual clinical experience the student will learn how to treat a variety of reading disabilities. Special attention will be given to developing specifically prescribed instruction based on diagnostic case study results. PREREQUISITE: READ 7841 or 8841.

†7843-Supervised Practicum in Reading Program.

8843. (3).

Designed to develop a student's skill in putting a reading program in operation. Under the guidance of the Reading Center staff, students will be required to plan, initiate, and carry out a desirable reading program. The programs will vary from basal reading programs in the primary grades to specialized programs for classrooms of handicapped children. PREREQUISITE: EDRS 7521.

8533. Seminar in Reading Research I. (3).

Designed to help students refine their research techniques through systematic and scientific appraisals of current research. Special attention will be given to understanding research design and statistics. Group and individual evaluations will be written and presented. PREREQUISITES: READ 7243, 7244, and 7245.

8534. Seminar in Reading Research II. (3).

Designed to lead the prospective doctoral student into the research and design for a scientific study in reading. Students will be required to design an original research study in some area of reading. Each study will contain an introduction, review of related research, statement of problem, outlines of procedures, materials and statistical techniques. PREREQUISITE: READ 8533.

SECONDARY EDUCATION (SCED)

6337. Seminar in Driver and Traffic Safety Education. (3).

An in-depth study of current problems, research and research methodology in driver and traffic safety education. PREREQUISITE: SCED 3335 or equivalent.

†*6701-20.Workshops in Secondary Education. (1-9).

A study of selected phases of the secondary school curriculum through group study. This course is designed to assist both inservice and prospective teachers of grades 7-12 in improvement of the teaching-learning processes. Attention is given to common elements of basic methodology, utilization of appropriate materials and resources, and evaluative criteria.

†SCED 6701.Workshop—Improvement in Instruction. (1-3).

†SCED 6702.Workshop—Secondary Curriculum. (1-3).

†SCED 6703.Social Studies Education. (1-3).

†SCED 6704.Workshop—Language Arts Education (1-3)

†SCED 6705.Workshop—Science Education. (1-3).

†SCED 6706.Workshop—Math Education. (1-3).

†SCED 6707.Workshop—Driver and Traffic Safety Education. (1-3).

†SCED 6708.Workshop—Newspaper in the Classroom. (13).

†SCED 6709.Workshop—Middle School. (1-3).

†6841.Supervised Practicum in the Secondary School. (3-9).

(formerly Directed Student Teaching in the Secondary School)

Observation of the growth and development of pupils and of methods of teaching; participation in school activities, culminating in assuming responsibility for teaching entire groups.

†6842. Supervised Practicum in the Secondary School (3-6).

(formerly Directed Student Teaching in the Secondary School)

For the student who has completed six semester hours or less of student teaching on the secondary level and desires some additional experience.

7301- Modern Methods in Secondary Education. (3).

8301. A consideration of the overall task or function of secondary education and what this means to secondary school teaching. How the secondary school can perform its role most effectively.

7341- Seminar in the Teaching of High School

8341. English. (3).

Includes both curriculum and instruction of high school English; selection of materials and the derivation of procedures for guiding learning in language, composition, and literature. Concentration by individual students upon special problems.

7342- Teaching Language and Composition in the

8342. Secondary School. (3).

For teachers of secondary school English, concentration of problems, curricular materials, and teaching procedures in the areas of grammar, and written composition, with emphasis on application of linguistic knowledge.

7343- Teaching Literature in the Secondary

8343. Schools. (3).

Curriculum materials, methods of organization, and approaches to the study of secondary school literature, with attention to the problems of teaching prose fiction and nonfiction, drama and poetry.

7351- Teaching of Mathematics in the Secondary

8351. School. (3).

Consideration of principles and techniques of teaching, as well as materials of instruction in the area of mathematics. Current mathematics curriculum materials, both experimental and commercial, will be studied and evaluated. **PREREQUISITE:** Permission of the instructor.

7361- Modern Methods and Techniques for

8361. Biological and Physical Science. (3).

An examination and analysis of modern high school biological and physical science programs. Orientation is directed toward familiarizing the high school teacher with current strategies for teaching the sciences, emphasizing extensive use of the laboratory as a source of information from which high school students can draw logical conclusions.

7362- Science Content and Materials for the

8362. Junior and Senior High School. (3).

A critical examination and analysis of the research in science education (teaching) and its implications for science content and materials. Emphasis will be placed on current concepts of

the science curriculum and the selection of appropriate materials in teaching the various sciences.

7371- The Teaching of the Social Studies in the
8371. Secondary School. (3).

A study will be made of the needs of secondary school youth as they relate to the Social Studies and of instructional strategies appropriate thereto.

7372- Social Studies Curricula for Secondary
8372. School Youths. (3).

Studies will be made of programs and curricular materials for the Social Studies Education of Secondary School Youths.

7373- Seminar in Secondary School Social Studies
8373. Education. (3).

Studies will be made of problems and issues in Social Studies Education with emphasis upon theoretical and research literatures relating to both curriculum and instruction.

7461- The Pupil Activity Program. (3).

8461. A study of current philosophy and practice in regard to responsibilities of teachers, supervisors, and administrators for those phases of educational practice which are essential for the educational program, but are not considered as part of general classroom procedure.

†7847. Intern Teaching in the Secondary School. (3-6).

A professional experience in supervised teaching designed for candidates for the degree of Master of Arts in Teaching who are seeking secondary school certification. Intern teaching consists of full-time teaching for two semesters providing nine semester hours of credit with not more than six semester hours during any one semester. **PREREQUISITES:** EDFD 7001, EDUC 7401, EDRS 7521, and EDPS 7121, an appropriate methods course, approval of the student's adviser, approval of the Coordinator of Student Teaching, and acceptance as an intern by a cooperating school system.

†7848. Intern Teaching in the Secondary School. (3-6).

This is the second semester of intern teaching for the student who has successfully completed Education 7847. **PREREQUISITE:** SCED 7847.

7911- Development of the Secondary Science

8911. Curriculum. (3).

A laboratory study of the historical development of the junior and senior high school science curricula. Emphasis is placed on major social factors and scientific theories that have influenced the changes in secondary school science curricula. **PREREQUISITE:** Permission of the instructor.

†7996. Thesis. (3-6).

Only students with superior scholarship are permitted to register in this course. The student must present in writing an outline describing the proposed thesis. This outline when approved by the faculty members under whose direction the thesis is to be written, must be submitted to the Chairman of the Department of Curriculum and Instruction for his approval. This course will involve writing the thesis and will emphasize the adequate setup of the problem, the collection of the data, their use, and conclusions to be reached.

Application for writing a thesis must be filled out on an approved form after consultation with the major professor and filed with the Dean of The Graduate School at the time of registration.

8302. Seminar in the Improvement of Instruction in the Secondary School. (3).

Factors bearing upon the improvement of instruction in the secondary school; the evaluation of research and the individual study of fundamental problems in the improvement of instruction in the secondary school. PREREQUISITE: EDUC 7401.

8441. Seminar in Secondary Curriculum Development. (3).

A study of fundamental problems and evaluation of current research in secondary curriculum development. Emphasis on identification and critical appraisal of current curriculum developments and trends in American secondary schools.

†Grades of S, U, or IP will be given.

*Not more than 9 semester hours of workshop credit can be applied toward a degree.

DISTRIBUTIVE EDUCATION

PROFESSOR C. EDWIN PEARSON, *Chairman*

Room 101, The College of Education Building

In the department of Distributive Education the prerequisites are: a Bachelor's degree; a valid teacher's certificate; 9 hours in Marketing, Salesmanship, Retailing or Advertising; Distributive Education 3010; two years verified practical experience in a distributive occupation(s).

The major of 21 semester hours are required as follows:

Area I (minimum of 9 hours) Management 6210, 6420; Marketing 7010, 7011, 7012, 7013.

Area II (minimum of 9 hours) Distributive Education 6611, 6680, 7620, 7630, 7650.

Elective (3 hours) from Marketing or Distributive Education.

Collateral study beyond the major (to make a minimum total of 33 hours) must include EDRS 7521.

Prior to graduation each candidate must pass a comprehensive examination which may, at the discretion of the department, be oral or written, or both.

6611. Principles and Philosophy of Vocational Education (3).

The history, philosophy, principles and objectives of vocational education; curriculum problems; contribution of vocational education to general education; trends and research problems in vocational education.

6641. Techniques and Coordination of Cooperative Occupational Education. (3).

Selecting training agencies, developing job analyses; selecting and briefing the training supervisor; selecting and working with advisory

committees; utilizing other community resources.

6680. Development and Supervision of Vocational Student Organizations. (3).

Aims and objectives of vocational student organizations and their value in occupational preparation; their development, curricular integration, operation, and evaluation.

†6690. Workshop in Distributive Education. (1-6).

Designed to meet the needs of inservice teachers by offering an opportunity to work cooperatively on problems which are real to teaching situations and which meet the needs of the individual. PREREQUISITES: Teaching experience and permission of director of workshop.

†6871. Student Teaching in Distributive Education. (3-9).

Observation of the operation of a high school distributive education program and of methods of teaching; participation in school activities, culminating in assuming responsibility for teaching and coordinating entire groups. PREREQUISITES: Distributive Education 3010, 4630.

7620. Administration and Supervision of Vocational Education (3).

Designed for the vocational teacher or public school administrator desiring to accept responsibility for supervising vocational education programs at local, area or state levels. Includes study of program design; curriculum construction; classroom supervision; physical layout;

administration of supplies, textbooks and equipment; state and federal legislation; accounting and reporting.

7630. Improvement in Instruction in Marketing, Merchandising, and Management. (3).

A critical evaluation of content, visual aids, methods and testing in marketing, merchandising, and management courses taught in high school and post-secondary distributive education programs.

7650. Problems in Distributive Education. (1-3).

Individual investigation and reports of specific problems.

7660. Organizing and Teaching Adult Distributive Education. (3).

A study of the techniques of working with trade associations, employment services, Manpower programs, itinerant instructors and the unique features of planning, organizing, promoting, teaching and evaluation balanced continuing education programs for distributive occupations.

7670. Distributive Education in the Community College. (3).

For teachers and administrators. A study of the objectives, nature and scope of post-secondary

distributive education programs. Included will be research in planning, developing, operating and evaluating programs in area vocational-technical schools, technical institutes and community colleges.

7690. The Project Method in Distributive Education. (3).

The development, use and coordination of class, small group and individual vocational projects providing simulated occupational experiences for high school Distributive Education students. PREREQUISITES: Distributive Education 4630 and Distributive Education 4641.

7993. Work Experience in Distribution for Distributive Education Teachers. (1-3).

For graduate students needing recent practical experience in a distributive occupation. Students will be employed in cooperating businesses and assigned duties training. The student will prepare a comprehensive written report of his practices, experience and problems and special investigations. PREREQUISITES: Teaching experience.

†7996. Thesis. (3-6).

†Grades of S, U, or IP will be given.

ECONOMICS

PROFESSOR KURT F. FLEXNER, *Chairman*

Room 400, The College of Business Administration Building

In the Department of Economics qualified graduate students may work toward the M.A. degree with a major in Economics or toward the M.B.A. degree with an area of concentration in Economics.

A. Requirements for the M.B.A. degree are summarized beginning on page 29.

B. Prerequisites for the M.A. degree in Economics: Students should have successfully completed or complete Management 3710 and 3711. Statistics I and II; Economics 3310, Microeconomic Theory; Economics 3320, Macroeconomic Theory. (Management 7011 and Economics 7020 are acceptable substitutes.)

C. Requirements for the M.A. degree are a minimum of 21 semester hours (24 if a thesis is written) of approved course work in economics courses. The remaining 9-12 semester hours, with approval, may be taken in collateral courses. At least 24 of the 33 hours required must be in courses designated primarily for graduate students (7000 level or above). A comprehensive examination, written or oral, must be successfully passed. Proficiency in intermediate level theory and in degree course work will be expected.

6130. Government Regulation of Business. (3).

The several approaches to legal and legislative control of business—especially tax laws, commission regulation, and anti-monopoly legislation—are considered in view of the impact of each on industrial operating policy and corporate social responsibility.

6220. History and Theory of American Labor Movements. (3).

A study of major events and trends in American labor history from colonial times to the present, and of their relevance to evolving labor-management relationships. An analysis of alternative theories of American trade union development. PREREQUISITE: Econ. 3210.

6610. Central Banking and Monetary Management. (3).

A critical examination of the history and economic function of central banks. Analysis of the role of monetary policy in achieving predetermined objectives, with emphasis on the interrelationships of monetary policy, central banking, and the financial markets.

6810 Introduction to Economic Analysis. (3).

An introduction to the application of quantitative techniques of analysis to economic problems, including the identification of meaningful relationships, formulating usable quantitative statements about them, and developing relevant analytical methods for dealing with them.

6820. Introduction to Economic Analysis. (3).

A continuation of Economics 6810 with emphasis on the more complex and involved relationships of economic theory.

7010. Proseminar in Economics I. (3).

An introduction to intermediate level study of basic economic principles, concepts, and economic analysis, structured for graduate students not planning further study in economics. PREREQUISITE: Three or fewer hours of economics credit, graduate or undergraduate.

7020. Proseminar in Economics II. (3).

An intermediate to advanced study of microeconomic and macroeconomic analysis and literature. This course is designed for MBA candidates, for non-economics majors as a terminal course in economics, and for transfer students in economics and other economics majors with undergraduate hours deficiencies. PREREQUISITE: Six or more hours of economics, graduate or undergraduate. (Economic majors, permission of the department chairman.)

7110. Managerial Economics. (3).

A study of the economic rationale underlying key management decisions. Managerial problems are identified and examined in the light of relevant economic concepts, and action is determined on the basis of economic logic. PREREQUISITES: Econ. 3310 and 6810 or equivalent.

7120. Economic Fluctuations and Forecasting. (3).

The recent theory and history of the dynamics of economic activity, especially with reference to economic recessions and inflations, are surveyed. This is used as a basis of the analysis of the several methods of economic forecasting. Examples of each are examined.

7130. Industrial Organization. (3).

The emphasis of this course is on an historical analysis of the structure, conduct, and performance of the major industries with oligopolistic market structures. The course content also reviews antitrust policy, the economics of public utilities, and government promotion and regulation of competition. PREREQUISITE: Intermediate Microeconomic Analysis.

7140. Business and Economic Research. (3).

A study of basic research techniques and their application to business and economic problems. Attention is given to both primary-source and

secondary-source study approaches. A critical evaluation of selected sample studies is made. PREREQUISITES: Statistics and College Algebra.

7220. Seminar in Comparative Labor Movements. (3).

An analysis of the historical, ideological, and institutional background of labor movements representative of West European economies, Soviet bloc economies, and so-called "middle way" economies. PREREQUISITE: Econ. 3310 or 3210.

7310. Advanced Microeconomic Theory. (3).

An advanced, comprehensive consideration of the literature on demand theory, market organization theory, theory of the firm, wage theory, interest theory, and profit theory. Emphasis is on the usefulness of the theoretical formulations for analytical, research, and empirical study purposes. PREREQUISITE: Econ. 6810 or equivalent.

7320. Advanced Macroeconomic Theory. (3).

An advanced, comprehensive consideration of the Keynesian and post-Keynesian literature on consumption function theory, liquidity preference interest theory, marginal efficiency of capital theory, multiplier theory, and social model building theory. Emphasis is on aggregate concepts for analytical, research, and empirical study purposes. PREREQUISITES: Econ. 3320 and College Algebra.

7350. International Monetary Theory and Policy. (3).

A study of international capital movements, long term and short term, in terms of shifting trade flows and the changing world conditions that affect them. Attention is directed to the instruments and institutions of international investment as well as to their domestic economic and monetary impact.

7410. Foundations of Economic Thought I. (3).

A critical study of the earlier origins of economic thought, the emergence of classicism and the several dissident schools that appeared in the century and a half following the appearance of classicism.

7421. Foundations of Economic Thought II. (3).

An analytical study of the development of economic thought from the time of the appearance of the Marginalist in the latter part of the 19th century to the present time. Marshall, post Marshallian writers, Keynes, and Neo-Keynesian writers receive major attention.

7440 Seminar in Public Policy and Labor Relations. (3).

Research and discussion into public policy issues in labor-management relations. Attention is focused particularly on the evaluation and current status of the institutions, agencies, and techniques of government regulation. PREREQUISITE: Consent of the instructor.

7501. Location Theory. (3).

An analysis of general problems of the special structure of the economy, especially in terms of the location of industry, of the transportation network, and of resources utilization. Emphasis on a theoretical framework that will be useful in later studies in regional and urban economics and in international trade theory. PREREQUISITE: Econ. 3310 (Microeconomics).

7510. Theory of Economic Growth and Development. (3).

A consideration of the economic variables involved in economic growth and of the functional relationships that may be of significance, from the point of view both of the underdeveloped economy and of the mature society. The more important theoretical growth models—Hicks, Harrod, Domar, Dussenberry, Goodwin, Kaldor, Solow—will be carefully analyzed and evaluated. PREREQUISITE: Econ. 3320 (Microeconomics).

7511. Economics of Transportation. (3).

An analytical and critical survey of selected problems in the development of a transportation system. Included are analyses of the principal economic problems which arise with the development and regulation of railroads and other modes of transportation.

7520. Regional and Urban Development Economics. (3).

A study of economic growth with the region as the economic development unit. Basic techniques such as regional social income accounting, regional balance of payments analysis, industry location study, economic base analysis, and regional input-output studies are examined. PREREQUISITE: Economics 3320 (Macroeconomics).

7611. Monetary Theory and Policy. (3).

A survey of monetary theory with particular emphasis on the current controversies in the field and their implications for policy. Recent contributions are carefully examined and evaluated. PREREQUISITE: Economics 3320 or equivalent.

7620. Fiscal Theory and Policy. (3).

A survey of the theory relating to the use of government taxing, spending and borrowing powers to affect the level of national income. Recent thought is carefully examined and evaluated and particular emphasis is given the current controversies relating to policy implications.

7720. Seminar in the Economics of the Public Sector. (3).

The course emphasizes (1) the production of public goods (2) financing of public goods and (3) problems created by a federal fiscal system. Current problems and policy decision will be used. Public finance theory and policy will be analyzed.

7750. Seminar in State and Local Finance. (3).

A seminar dealing in state and local finance which deals with an analysis of taxation and public expenditures and the fiscal relationship of intergovernment units. PREREQUISITE: Economics 3320.

7810. Econometrics I. (3).

A review of the quantitative methodology necessary for understanding and using econometric models. An introduction to the basic concepts of econometrics, with more simple models conceptualized and computed as a means of illustrating econometric technique. PREREQUISITE: Econ. 6810 or equivalent.

7820. Econometrics II. (3).

An examination of the basic theory of the stochastic variable and its relationship to the econometric model. A study of how the simple model can be expanded to become a useful forecasting and analytical device. PREREQUISITE: Econometrics I.

7910. Problems in Economics. (1-6).

Directed independent reading and research in an area selected by the student with the approval of the staff member supervising. PREREQUISITE: Consent of the Department Chairman.

7930-1-2. Seminar in Economics. (3).

A general problem area, current in economics, is selected. Individual studies in this area are then pursued with group analysis, discussion, and evaluation at regular meetings. Emphasis is on research technique. PREREQUISITE: Consent of the instructor. May be repeated for credit.

†7996. Thesis. (3-6).

Application for writing a thesis must be filled out on an approved form after consultation with the major professor, and filed with the Dean of The Graduate School. Independent research for the master's degree.

8120. Seminar in Economic Forecasting. (3).

After a careful examination of the literature of general and regional forecasting, the student is required to prepare several comprehensive, specific forecasts. These are presented to and defended before the class. PREREQUISITE: Econ. 7120.

8410. Seminar in Economic Thought. (3).

Individual studies in economic thought are pursued. The student is required to select one of the more recent economic thought systems—Marxism, Neoclassicism, Institutionalism, Keynesianism, Neo-Keynesianism—for intensive study and critical analysis. PREREQUISITES: Econ. 7410, 7421.

EDUCATIONAL ADMINISTRATION AND SUPERVISION

PROFESSOR FRANK W. MARKUS, *Chairman*

Room 406, The College of Education Building

In the Department of Educational Administration and Supervision students may select from several programs as follows:

A. Master of Education—Educational Administration and Supervision (Elementary)—Requirements: EDAS 7000, 7100, 7110, 7250, 7400, and one other course from departmental offerings, EDRS 7521, EDUC 7401, *9 semester hours outside the College of Education. Minimum total: 33 semester hours.

B. Master of Education—Educational Administration and Supervision (Secondary)—Requirements: EDAS 7000, 7100, 7310, 7350, 7400, and one other course from departmental offerings, EDRS 7521, EDUC 7401. *9 semester hours outside the College of Education. Minimum total: 33 semester hours.

C. Master of Education—Educational Administration and Supervision (General)—Candidates for this degree must meet the following prerequisites:** a minimum of 6 semester hours in upper division undergraduate or graduate work in psychological, sociological, philosophical or historical foundations. The program is available to non-certificated personnel only. Requirements: Administration 6 semester hours. Supervision 3 semester hours, Research 3 semester hours, 12 semester hours selected from departmental offerings, *9 semester hours selected from offerings outside the College of Education. Minimum total: 33 semester hours, excluding prerequisites.

D. Master of Education—Adult Education (See page 65).

E. Education Specialist—Educational Administration and Supervision (Superintendency), (Elementary), (Secondary); or ** (Higher Education)—Requirements: 30 semester hours in the major concentration, 12 semester hours of collateral work in the College of Education, EDRS 7521, 8541, 3 additional semester hours in Foundations of Education and ***15 semester hours outside the College of Education including courses from the social sciences, behavioral sciences and political sciences. Additional information pertaining to specific course requirements in the major collateral areas may be secured from the Department of Educational Administration and Supervision. Minimum total: 66 semester hours of graduate credit with a minimum of 9 semester hours selected from courses numbered 8000 or above.

F. Doctor of Education—Educational Administration and Supervision or Educational Administration and Supervision ** (Higher Education)—Requirements: 48 semester hours in the major concentration, 15 semester hours of collateral work in the College of Education, EDUC 8950, EDRS 7521, 8541, and 8522 or 8542 or 8543, 3 additional semester hours in Foundations of Education and ***21 semester hours outside the College of Education including courses from the social sciences, political sciences, behavioral sciences, and business administration. Additional

information pertaining to specific course requirements in the major and collateral areas may be secured from the Department of Educational Administration and Supervision. Minimum total: 99 semester hours of graduate credit with a minimum of 21 semester hours selected from courses numbered 8000 or above.

*If the course work for the student's teaching endorsement area (Home Economics, Physical Education, etc.) is offered in the College of Education, the 9 hours may be taken within the College.

**NCATE does not accredit programs for non-certificated personnel nor programs in higher education.

***If the course work for the student's teaching endorsement area (Home Economics, Physical Education, etc.) is offered in the College of Education, 9 semester hours may be taken within the College. A minimum of 6 of the 15 semester hours must be taken in one area of the social sciences, behavioral sciences or political sciences, or business administration.

****If the course work for the student's teaching endorsement area (Home Economics, Physical Education, etc.) is offered in the College of Education, 12 semester hours may be taken within the College. A minimum of 9 of the 12 hours must be taken in one area of the social sciences, political sciences, behavioral sciences, or business administration.

EDUCATIONAL ADMINISTRATION AND SUPERVISION (EDAS)

7000. Human, School and Community Relationships. (3).

The human implications relationship of the school to the community movements and organizations concerned with health and safety, government and civic life, religion, occupations, extension services, children's organizations and clubs, adult education, cultural education, community cooperative movements, etc; relationships of the community to such school activities as attendance, athletics, lunch, libraries, extra-curricular program, home study, records and reports, guidance, etc.

7100. Introduction to Educational Administration. (3).

A course designed to treat in an introductory manner, the field of educational administration. To examine the doing of educational administration from the standpoint of theory and practice with particular attention to its scope, procedures, problems and issues, processes and the nature and types of personnel required in the United States.

7110. Elementary School Administration. (3).

A study of the major aims of the elementary school; planning the daily program through the integration of related subjects; learning to keep and interpret various types of records and reports. Considering the importance of proper teacher-parent relationships.

7120- School Finance. (3).

8120. The theory and practice of financing public education in the United States, development of guiding principles of educational finance, trends and needs in state and federal participation in school support, and local operational finance; particular attention is given to the financing of the public schools of Tennessee.

7130- School Business Administration. (3).

8130. The role of business administration in public education; principles and practices of auditing, budget preparation and control, debt service, insurance, legal aspects, payroll administration, purchasing, supply management and transportation.

7140- Educational Technology, Facility, and**8140. Resource Utilization. (3).**

A consideration of the school plant, grounds, and major equipment, instructional and other, in relation to the educational needs of the community; factors in site selection, procedures in planning school buildings, principles of design and construction, architectural and contractual services and maintenance.

7160- Administration of School Personnel and**8160. Negotiations. (3).**

This course is designed to deal with the various aspects of school personnel management. Qualification, selection, pay schedules, and general personnel policies dealing with retirement, sick leave, insurance, and other such problems will be considered. Attention will be given to the efficient use of administrative, instructional and non-instructional personnel, as well as the procedures and practices of negotiation.

†7170-Practicum in Educational Administration**8170. and Supervision. (1-6).**

This practicum is designed to provide experiences for students of school administration. The student will have opportunity to observe and participate as an administrative practitioner in selected school systems. The areas of observation and practice will include administration, supervision, school-community relationships, finance, and plant and transportation at secondary and/or elementary levels. (Prospective enrollees should give thirty days notice of intention and secure approval of the chairman of the department.)

†7171-Internship in Educational Administration**8171. and Supervision. (1-6).**

The internship is designed to provide practical experience for students of school administration. The student will have opportunity to observe and

participate as an administrative intern in selected school systems. The areas of observation and participation will include administration, supervision, school-community relationships, finance, and plant management. (Prospective enrollees should give thirty days notice of intention and secure approval of the chairman of the department.)

†7172-Practicum: Administration of Higher**8172. Education. (1-6).**

The practicum is designed to provide experience for students interested in administrative positions in higher education. The student will have opportunity to observe and practice as an administrator in selected colleges. The areas of observation and participation will include administration, records and admissions, student personnel services, plant planning and management, community services, and research. (Prospective enrollees should give thirty days notice of intention and secure approval of the chairman of the department.)

†7173-Internship in the Administration of Higher**8173. Education. (1-6).**

The internship is designed to provide experience for students interested in administrative positions in higher education. The student will have opportunity to observe and participate as an administrative intern in selected colleges. The areas of observation and participation will include administration, records and admissions, student personnel services, plant planning and management, community services, and research. (Prospective enrollees should give thirty days notice of intention and secure approval of the chairman of the department.)

7180- School Law. (3).

8180. This course is designed to consider the Federal and State statutes and local regulations which are applicable to the field of education. Emphasis is placed on legal requirements and their implications for public school operation. Court decisions relating to public schools are considered. The course is for administrators and students of administrative procedures.

7250. Elementary School Supervision. (3).

This course deals with significant supervisory problems at the elementary school level. Recent research findings will be used to focus on the problems as they are dealt with through democratic elementary school supervision.

7310. High School Administration. (3).

This course is offered as a concise description of modern useful practices in organizing and administering secondary schools, types of high schools, selection and assignment of staff, program of studies, records, management of buildings and grounds, pupil personnel guidance, selection, retention, and improvement of teachers, and interpreting the school to the public.

7350. High School Supervision. (3).

This course is designed to investigate some of the modern theories, principles and practices of school supervision as they apply to the practical problems of supervision at the secondary school level. Qualifications, selection and performance of supervisors are considered, along with the functional demands on modern secondary schools.

7400. Leadership Exploration Seminar. (1-6).

This course treats the individual student's study of his relationship to and prospects for a career in educational administration.

7500- Contemporary Issues in Educational Leadership. (3).

Seminar on contemporary issues confronting leaders in American education currently before the profession and the public.

7510- Seminar in Educational Leadership. (1-6).

8510. This course is designed primarily for persons in positions of educational leadership. It will deal with problems and issues deriving from movements and trends in our present day culture. Emphasis will be given to educational leadership arising therefrom.

7610- Urban School Administration. (3).

8610. A course designed to develop the ability to administer an educational unit in the densely populated area of a city.

7611- Community Education Administration. (3).

8611. A course in the concept of community education involving participation of community members to formulate a community education program. This course will work within a delivery arrangement suited to participation of people in an off-campus locale (workshop).

7700- Readings and Research Problems in

8700. Human School and Community Relationships. (1-3).

Individual investigations and reports of specific problems.

7730- Readings and Research Problems in School

8730. Finance and Business Management. (1-3).

Individual investigations and reports of specific problems.

7740- Readings and Research Problems in School

8740. Plant and Transportation. (1-3).

Individual investigations and reports of specific problems.

7750- Readings and Research Problems in

8750. School Supervision. (1-3).

Individual investigations and reports of specific problems.

7760- Readings and Research Problems in

8760. Administration of School Personnel and Negotiations. (1-3).

Individual investigations and reports of specific problems.

7780- Readings and Research Problems in School Law. (1-3).

Individual investigations and reports of specific problems.

7790- Readings and Research Problems

8790. in Higher Educational Administration. (1-3).

Individual investigations and reports of specific problems.

7810. Politics and Power in Educational Leadership. (3).

A comprehensive academic and field study of techniques and strategies to enable leaders in education to understand and to discover sources of community power which have potential for influencing school and education policy.

†7996. Thesis. (3-6).

Only students with superior scholarship are permitted to register in this course. The students must present in writing an outline describing the proposed thesis. This outline, when approved by the faculty members under whose direction the thesis is to be written, must be submitted to the Chairman of the Department of Educational Administration and Supervision for his approval. This course will involve writing the thesis and will emphasize the adequate setup of the problem, the collection of the data, their use, and conclusions to be reached. Application for writing a thesis must be filled out on an approved form, after consultation with the major professor and filed with the Dean of The Graduate School at the time of registration.

†8000. Education Specialist Thesis. (3-6). (See course 7996 description)**†8001. Education Specialist Field Study. (3-6).**

Individual study of a significant problem in a local school system. The study shall be closely related to the student's field of major concentration.

8100. Theories, Practices and Research in Educational Administration. (1-6).

The study will be concerned with the basic theories of the organization and administration of public education; philosophical and historical foundations of theories; historical development of theories in current practices; and exploration of possible future administrative theories and practices. **PREREQUISITE:** EDAS 7100 or permission of instructor.

8190. An Overview of Higher Education. (3).

This course is an orientation of higher education and will deal in breadth with the facets of higher education vital to an understanding of the field. It is designed to build a professional perspective toward higher education.

8191. The Community College. (3).

A survey of the history and philosophy of the community college, its place and function,

establishment and control, administration, curriculum, staff, supporting physical plant, student population, guidance, and public relations. PREREQUISITE: permission of the instructor.

8192. The Organization and Structure of Higher Education. (3).

Educational policies, functions, and practices in the administration of higher institutions, with emphasis upon the various types of organizational structure and services. PREREQUISITE: permission of instructor.

8200. The Administration of Instructional Programs and Materials. (3).

Practices and the processes used by administrative and supervisory leaders who plan, organize, and co-ordinate the professional activities of teachers in improving pupil-learning experiences. PREREQUISITE: permission of instructor.

8220. The Economics of Education. (3).

An advanced graduate course in the broader economic implications of the education section of the national and international trends as they relate to manpower demands as well as the place of education in meeting the demands of the macroeconomy. PREREQUISITE: EDAS 7120/8120.

8260. The Administration of Pupil Personnel. (3).

This course acquaints the student with pupil personnel services including accounting, reporting, classification, attendance, and problems of pupils' adjustment to the school situation. PREREQUISITE: permission of instructor.

8280. Government of Education. (3).

An advanced graduate course to develop an understanding of the overall patterns of governmental activities that affect education at the international, national, state and local level. PREREQUISITE: EDAS 7180/8180.

8300. The School Survey. (1-6).

The history and development of public school surveys, with a critical study of current practices, trends and programs is emphasized. Field experience in school surveys will be made available to students taking the course. PREREQUISITE: EDRS 7521 or permission of instructor.

8340. Educational Facility Planning & Practicum. (3).

Emphasis will be placed on the work of the district and state director of school plant planning; the preparation of educational specifications; blueprint reading in relation to educational specifications; and current practices and literature in school plant planning. The student will spend time in field work concerned with effective and efficient school plant planning and construction. PREREQUISITES: Education 7140/8140 and permission of instructor.

8370. Educational Administration Performance Laboratory. (1-6).

An advanced graduate course designed to improve ability to administer complex educational systems. Laboratory experience such as gaming and simulation are provided to develop administrative competencies relating to management of information systems, computer application, network planning and projection.

8400. Planning, Communicating and Future Seminar. (1-3).

This course treats, at the post-master's level, the developing of leadership competencies in planning, communicating and futurizing for career educational leader

†9000. Doctoral Dissertation. (3-12).

ADULT EDUCATION (AED)

Room 202, College of Education Building

Students majoring in Adult Education will complete a Master of Education Degree which is offered with a thesis or without a thesis. Adult educators and prospective adult educators may select either plan. The program is a *non-certificated one; however, anyone desiring to teach in the public schools must meet the State Board of Education's certification or employment standards. Prerequisites for admission to the program are 6 semester hours of upper division undergraduate or graduate work in psychological, sociological, philosophical or historical foundations.

Students taking a Master's Degree with a major in Adult Education must meet the following requirements:

1. At least 15 semester hours must be taken in those courses with an AED prefix.
2. AED 7080, AED 7130 and EDRS 7521 are required of all students.
3. Nine semester hours must be taken outside the College of Education. However, if the teaching endorsement area (Home Economics, Physical Education, etc.) is offered in the College of Education, the 9 hours may be taken within the college. Minimum Total: 33 semester hours, excluding prerequisites.
4. Prior to graduation each candidate must pass a comprehensive examination which may, at the discretion of the department, be oral or written, or both.

*NCATE does not accredit programs for non-certificated personnel.

ADULT EDUCATION (AED)

†7007. Workshops in Adult Education. (1-6).

Designed to offer continuing growth in areas of interest and need to the professional in the field of adult education. Experiences include group study in the following areas: curriculum, basic education, career counseling, methods and procedures, and group processes.

7080. Introduction to Adult Education. (3).

This course will provide an overview of the field of adult education. Emphasis will be given to philosophy, objectives, and nature of adult education, its problems and possible solutions. Further emphasis will be placed on historical development, program planning, methods and techniques, the nature of the adult learner, and financing.

7081. Methods, and Techniques in Adult Education. (3).

After examining the characteristics unique to the educated and uneducated adult, emphasis will be placed on the analysis of the methods and techniques available for working with adults, including the community development method, and their applicability under varying circumstances.

7099- Community Programs in Adult Education. (3).

A comprehensive, field-centered investigation of adult education programs conducted by various organizations, agencies, and groups as a primary, supplementary, or complementary function. Emphasis will be given to understanding the theoretical foundations upon which the programming process is predicated, developing a theoretical model, and acquiring the conceptual tools necessary for analyzing the programming process in any adult education organization.

7130. The Adult Learner. (3).

A critical examination will be conducted relative to the major learning problems of adults. Emphasis will be given to the factors which affect learning ability, achievement, and motivation throughout the adult life-cycle.

†7174-Practicum in Adult Education. (1-3).

8174. The course is designed to provide supervised experiences in application of adult education

theories and principles in selected meaningful work experiences. **PREREQUISITE:** Permission of the instructor.

†7175-Internship in Adult Education. (1-6). 8175.

Designed to provide practical experience for students preparing for positions as teachers of adult groups, executives of adult organizations having educational purposes, directors or administrators of community programs of adult education, or instructors of adult education. The intern will work cooperatively with a qualified worker in the field of adult education. (Prospective enrollees should give thirty days notice of intention and secure approval of the chairman of the department.) **PREREQUISITE:** Permission of instructor.

7245. Curriculum Planning in Adult Basic Education. (3).

After examining the unique characteristics of adults, attention will be focused upon principles of curriculum building and their applicability to adult basic education clientele.

7300. Adult Education Seminar. (3-6).

An examination of problems and issues confronting adult education, with emphasis on review and interpretation of related research. **PREREQUISITE:** Permission of instructor.

7795- Readings and Research Problems 8795. in Adult Education. (1-6).

Students will be enabled to pursue adult education problems consistent with individual interests and needs under the direction and guidance of the faculty. **PREREQUISITES:** ADED 7080, 7099, and permission of the instructor.

†7996. Supervision Thesis. (3-6).

Master's Thesis.

†Grades of S, U, or IP will be given.

ELECTRICAL ENGINEERING

PROFESSOR THOMAS D. SHOCKLEY, JR., *Chairman*

Room 206, Engineering Building

The Department of Electrical Engineering offers coursework leading to a Master of Science degree. Students may pursue areas of concentration in Automatic Control Systems, Computer Science, Microwave and Antenna Systems, and Solid State Electronics.

Students who hold the degree Bachelor of Science in Electrical Engineering or an equivalent degree will be admitted to full-time graduate work if their academic record warrants. Students who hold degrees in mathematics or physics will be admitted to the program if their academic record warrants, but they will be expected to take additional coursework to complete their background in basic electrical engineering.

6202. Electrical Power Systems. (3).

Investigation of problems associated with the transmission of electrical energy. Load-flow studies, and fault analysis by use of symmetrical components. **PREREQUISITES:** Graduate standing and permission.

Three lecture hours per week.

6205. Analog Simulation Techniques. (4).

Introduction to the basic concepts of component and system design of Analog Computers. Application of the Analog computer in the solution of linear and nonlinear engineering

problems. PREREQUISITES: Graduate standing and permission.

Three lecture, three laboratory hours per week.

6212. Electromagnetic Field Theory II. (4).

Plane, cylindrical and spherical waves; high frequency transmission lines; introduction to microwave and antenna theory. PREREQUISITES: Graduate standing and permission.

Three lecture, three laboratory hours per week.

6213. Antenna Theory and Design. (4)

Continuation of 6212 with emphasis on the theory and design of antennas. Determination of antenna radiation characteristics. Introduction to antenna array theory. PREREQUISITE: Electrical Engineering 4212-6212.

Three lecture, three laboratory hours per week.

6215. Introduction to Bio Engineering. (3).

Use of engineering concepts for modeling physiological phenomena. Introduction and use of piecewise linear functions for the characterization of system components such as the respiratory, sensory, circulatory and muscular subsystems. Introduction to computer processing of electrocardiograms, cybernetic actuators, and design of prosthetic devices. PREREQUISITES: Graduate standing and permission.

Three lecture hours per week.

6216. Bio-Control Systems. (3).

Introduction to neural networks. Use of classical feedback control theory for the study of homeostasis and biological control mechanisms. Use of electromagnetic field theory in electrocardiography and hemodynamics. PREREQUISITES: Graduate standing and permission.

6221. Pulse and Digital Circuits. (4).

Timing, scanning, trigger and pulse circuits; astable, bistable and monostable multivibrators; binary counting circuits. PREREQUISITES: Graduate standing and permission.

Three lecture, three laboratory hours per week.

6222. Introduction to Logical Design and Switching Circuits. (3).

Introduction to the analysis and design of logical switching circuits; logic, number systems, digital computer components. PREREQUISITE: Graduate standing and permission.

Three lecture hours per week.

6230. Data Communications Systems. (3).

A study of data communications in information and computing systems. Analog and digital means of transmitting and controlling information. Organization and requirements of data communication systems including modulation and demodulation, multiplexing, switching, error detection and correction. On and Off line, real and non-real time, and time sharing systems. PREREQUISITES: Graduate standing and permission.

Three lecture hours per week.

6231. Communication Theory. (3).

Frequency and time domain. Modulation, random signal theory, auto-correlation, basic information theory, noise communication system. PREREQUISITES: Graduate standing and permission.

Three lecture hours per week.

6232. Discrete Signal Processing. (3).

An introduction to deterministic and random discrete-time signal time averaging, digital filtering, spectral analysis, and detection and estimation of signals. Applications to computer processing of biomedical, seismic, and radar signals. PREREQUISITES: Graduate standing and permission.

6240. Introduction to Quantum Electronics. (3).

Quantum concepts, Schrodinger equation quantization of electromagnetic radiation. Lasers theory and application. PREREQUISITE: Graduate standing.

Three lecture hours per week.

6241. Physical Electronics. (3).

Fundamental particles: quantum concept statistics; crystal structure; thermal, dielectric magnetic and optical properties of solids; solid state devices. PREREQUISITES: Graduate standing and permission.

Three lecture hours per week.

6251. Control System Engineering. (4).

General equations of physical linear systems and their transfer functions. Transient analysis and stability of control systems. Bode plots, Nichols plot, Routh-Hurwitz criterion, root locus method introduction to compensation techniques and systems in state space. PREREQUISITES: Graduate standing and permission.

Three lecture, three laboratory hours per week.

6261. Introduction to Network Synthesis. (3).

Synthesis of canonical LC, RL, RC, and RLC driving point impedances. Introduction to the synthesis and realization of lossy one and two port networks. PREREQUISITES: Graduate standing and permission.

Three lecture hours per week.

7021. Modern Engineering Concepts I. (3).

This course is designed for qualified teachers of mathematics and physical science at the high school level. A course in the theories and the techniques that contribute to life in a modern technological society. Concepts of modeling, and the use of analogies and analog computers in the simulation of processes. An introduction to man and machine logic, and the functioning of digital computers. This course cannot be applied toward a major in engineering. PREREQUISITES: Graduate standing and permission.

Three lecture hours per week.

7022. Modern Engineering Concepts II. (3).

This course is designed for qualified teachers of mathematics and physical science at the high

school level. An introduction to digital computer programming and its application. The use of compilers, assemblers, and sub-routines. The study of dynamic systems, and the concepts of stability and feedback. Man-machine systems, and the development of devices for human use. This course cannot be applied toward a major in engineering. PREREQUISITE: Electrical Engineering 7201.

Three lecture hours per week.

01. Electronic Processes in Solids. (3).

Structure of crystals. Quantum concepts. Statistical distributions and transport phenomena. Conduction in conductors and semiconductors. PREREQUISITES: Graduate standing and permission.

Three lecture hours per week.

02. Solid State Devices. (3).

Continuation of 7201 with emphasis on the analysis of modern solid state devices such as masers and lasers. PREREQUISITE: Electrical Engineering 7201 or permission.

Three lecture hours per week.

05. Hybrid Simulation Techniques. (3).

Introduction to hybrid computer techniques, hardware and software. Hybrid computer solutions of field problems, parameter optimization and optimal control system problems and man-machine systems. PREREQUISITE: Electrical Engineering 6205 or permission.

Three lecture hours per week.

211. Advanced Electromagnetic Field Theory. (3).

Advanced studies in electromagnetic fields, radiation and propagation of energy. PREREQUISITE: Electrical Engineering 6212 or permission.

Three lecture hours per week.

212. Wave Propagation in Plasma. (3).

Propagation of electromagnetic waves in homogeneous and inhomogeneous plasma. Dispersion relations, plasma oscillations and energy transfer. PREREQUISITE: Electrical Engineering 6212 or permission.

Three lecture hours per week.

213. Radiation and Antenna Theory. (3).

Radiation characteristics of conducting and dielectric configurations. Theoretical analysis of antennas and antenna systems. Engineering applications of antennas and radiating structures. PREREQUISITE: Elec. 6213 or permission.

Three lecture hours per week.

215. Physiological Signal Processing. (3).

Application of classical spectral theory, discrete transform theory, and attribute identification techniques to the processing of electrocardiograms, electroencephalograms, electromyograms, and electroretinograms. Computer analysis of experimental data from evoked potential experiments. Introduction computer

diagnosis. PREREQUISITES: Graduate standing and permission.

7221. Microwave Engineering. (3).

Analysis of discontinuities in waveguides and cavities. Microwave networks. Perturbational and variational techniques. Faraday rotation in ferrites. PREREQUISITE: Electrical Engineering 7211 or permission.

Three lecture hours per week.

7231. Transistor Circuit Analysis and Design. (3).

Analysis and design of small and large signal transistor amplifiers. Multistage amplifiers. Analysis and design of oscillators. Feedback and stability in amplifier design. PREREQUISITES: Graduate standing and permission.

Three lecture hours per week.

7232. Advanced Semiconductor Circuit Design. (3).

Continuation of 7231. Design and application of negative resistance devices. Parametric devices, noise theory; application of these devices in communications systems. PREREQUISITE: Electrical Engineering 7231.

Three lecture hours per week.

7240 Analysis and Design of Linear Networks. (3).

Analysis of two port networks, ideal response characteristics, synthesis of passive networks, and equivalent circuit representation of active networks. PREREQUISITES: Graduate standing and permission.

Three lecture hours per week.

7241. Network Synthesis. (3).

Introduction to the modern network synthesis techniques. Synthesis using ladder networks, lossy elements and iterative methods. PREREQUISITE: Electrical Engineering 7240 or permission.

Three lecture hours per week.

7251. Random Signals and Noise. (3).

Statistical methods for describing and analyzing random signals and noise. Autocorrelation, crosscorrelation, and spectral density functions. Optimal linear filter theory. PREREQUISITE: Electrical Engineering 6231 or permission.

Three lecture hours per week.

7252. Information Theory. (3).

Introduction to entropy and channel capacity, group codes, block codes, cyclic codes. Application of coding techniques to improve system reliability. Error correcting codes. PREREQUISITE: Electrical Engineering 7251 or permission.

Three lecture hours per week.

7261. Logical Design and Switching Circuits. (3).

Analysis and design of switching circuits; logic, number systems, digital computer components, synthesis of sequential switching circuits. PREREQUISITE: Electrical Engineering 6222, or permission.

Three lecture hours per week.

7262. Introduction to Finite Automata Theory. (3).

Finite-state sequential machines, neural networks, man-machine systems, pattern recognition, language structures, and probabilistic automata theory. **PREREQUISITE:** Electrical Engineering 7261 or permission.

Three lecture hours per week.

7271. Minicomputer Systems. (3).

A study of modern mini- and microcomputer systems. Emphasis is placed on computer architecture and how it influences instruction, data and control structures. Program and data organization, memory management, and other software engineering techniques are studied. Present mini- and microcomputer applications in communications, process control, and instrumentation and related interfacing problems are discussed. **PREREQUISITES:** Graduate standing and permission.

Three lecture hours per week.

7272. Microprogramming. (3).

The principles and practices of microprogramming in modern computer systems. Effects of microprogramming on computer architecture and instruction sets, on software engineering and hardware/software tradeoffs, and on computer applications, particularly in real time systems are considered. **PREREQUISITES:** Graduate standing and permission.

Three lecture hours per week.

7521. Advanced Control System Engineering I. (3).

Cascade and feedback compensation. Analy and control of nonlinear systems. Introduction adaptive control systems and optimal techniques. **PREREQUISITE:** Electrical Engineering 6251 or permission.

Three lecture hours per week.

7522. Advanced Control System Engineering II. (3).

Continuation of 7521. Performance criteria optimum design, computer usage in optimum design. Adaptive control and learning systems. **PREREQUISITE:** Electrical Engineering 7521 permission.

Three lecture hours per week.

7991. Projects I. (3).

Independent investigation of a problem selected in consultation with instructor; report required. **PREREQUISITES:** Graduate standing and permission.

Nine laboratory hours per week.

7992. Projects II. (3).

Independent investigation of a problem selected in consultation with instructor; report required. **PREREQUISITES:** Graduate standing and permission.

Nine laboratory hours per week.

†7996. Thesis. (6).

Master's thesis.

†Grades of S, U, or IP will be given.

ENGINEERING INDUSTRIAL SYSTEMS ANALYSIS

FREDERICK W. SWIFT, *Director*

Room 201-C Engineering Building

INDUSTRIAL SYSTEMS ANALYSIS (INSA)**7610. Modeling and Simulation of Industrial Systems. (3).**

The use of programming and the simplex algorithm to modeling of inventory, and traffic systems. Organizing and scheduling production in manufacturing systems. **PREREQUISITES:** Introductory programming and consent of instructor.

7620. Optimization of Controlled Systems. (3).

Consideration and analysis of alternate operating methods in engineering systems. Optimization theory applied to allocation and utilization of industrial resources. **PREREQUISITE:** Equivalent of INSA 7610 or consent of instructor.

7630. Industrial Application of Operations Research (3).

Design of production planning and control systems. Forecasting and aggregate planning for large scale projects. Design of computer controls. **PREREQUISITE:** Equivalent of INSA 7610 or consent of instructor.

7640. Quality Assurance and Reliability. (3).

Theory of reliability and quality control. The use of probability models. Data display and reduction sampling statistics and their distributions. Implementation of quality assurance in industrial production. **PREREQUISITE:** Basic statistics and probability or consent of instructor.

7650. Application of Sequential Decision Theory. (3).

General structure of statistical games; the use of optimal strategies, the invariance principle and sequential decision processes in the solution of industrial problems. Selected applications in queueing theory, fluctuation and renewal theory. **PREREQUISITE:** Consent of instructor.

7660. Advanced Stochastic Models in Industry. (3).

Simulation monte carlo techniques; networks; integer programming; introduction to non-linear programming; dynamic programming; Markov chains; reliability and replacement. PRERE-

QUISITE: Equivalent of INSA 7610 or consent of instructor.

†7996.Thesis. (3-6).

†Grades of S, U, or IP will be given.

ENGINEERING TECHNOLOGY

PROFESSOR W. T. BROOKS, *Director*

Room 205, Technology Building

In the Division of Engineering Technology the Master of Science Degree in Technical Education is offered either with a thesis (Plan A) or without thesis (Plan B). Teachers and prospective teachers of technology may select either plan. Those teachers planning to pursue work beyond the Master's Degree are encouraged to select Plan A. Students will consult the departmental adviser as to the program of study. The basic requirements are as follows:

Prerequisites: A minimum of 18 semester hours in an undergraduate technology program or related area. Requirements: (1) A total of 33 semester hours for candidates not writing a thesis; (2) A total of 30 semester hours for candidates writing a thesis; (3) 7090 Research in Technological Education and 7015 Applied Statistical Methods of Industry must be completed by each student; (4) No less than 9 semester hours may be taken in one specialization area; (5) No less than 9 semester hours may be taken in professional-technical course work; (6) Candidates for the degree must pass a comprehensive written examination conducted by three staff members designated by the student and his adviser. The written examination will be administered once each semester and once during the summer term on a date published by the division. A follow-up oral examination is optional with the examining committee.

PROFESSIONAL-TECHNICAL**7001. Foundations of Technical Education. (3).**

A study of occupational shifts resulting from recent advances in science and technology. The changing nature of the labor force, economic and sociological implications of automation and various contemporary sources of power. Attention will be given to the educational programs needed to meet technical and skilled manpower requirements. A study of the development of technical education and its function, philosophy, trends and types of Industrial Arts. Vocational-Industrial, and Technical Education programs.

7002. Technical Education Program Planning. (3).

Program and curriculum development in Industrial Arts, technical institutes, junior colleges, and area vocational-technical schools. Problems of college students and their adjustment to college-level industrial and technical subject-matter. Professional problems, ethics and advancement of the technical teacher. A detailed study of curriculum design including the interrelationship of mathematics, science and technical courses in technical curriculum. Selection and arrangement of teaching content, methods and preparation of assignments.

7003. Administration and Layout of Technical Educational Facilities. (3).

The functions of administration and supervision; problems involved in the organization and operation of technical and vocational programs. For administrators, supervisors of vocational-technical education, and those wishing to prepare for such positions. Principles and practices underlying the planning and designing of shops and laboratories in industrial and technical education.

7005. Measurements and Evaluation of Products, Skills, and Technical Knowledge. (3).

Criteria and instrument development, testing techniques and appraisals. Special emphasis given to the principles and methods of evaluation of progress in laboratory and construction of pertinent and effective evaluative devices.

7006. Instructional Aids for Technical Education. (3).

Construction and use of teaching aids for technical subjects. A study of manufactured aids and the production of non-commercially available aids to facilitate comprehension of industrial proceeds and technological principles involved. Emphasis will be given to visuals, mock-ups, working models, and other such aids.

7015. Applied Statistical Methods of Industry. (3).

The application of statistical concepts to production processes and data gathering in industry including frequency, distribution, location and dispersion, probability dispersions, confidence limits, significance tests and industrial sampling.

7090. Research in Technical Education. (3).

Analysis of the materials, methods, and techniques of research available in technical education. Emphasis on the design, investigation, and reporting of research studies relating to technology and technical education.

7091. Studies in Applied Technology. (3-6).

A course designed to encourage field research where theory learned in class is applied to a selected problem existing in industry or technical education. Emphasis is placed upon the scientific approach to solving a given problem. Practical teaching experience in the form of an internship program will be required for inexperienced teachers as a part of this course.

†7996.Thesis. (3-6).

This course will involve writing the thesis and will emphasize the adequate setup of the problem, the collection of the data, their use, and

conclusions to be reached. The students must present in writing a proposal that is acceptable to his graduate committee under whose direction the thesis is to be written.

SPECIALIZATION COURSES ARCHITECTURE

7600. Advanced Mechanical Design. (3).

Advanced environmental architecture correlated with the practical design of utility plants and structures will be studied in relation to isolated self-contained industrial plants.

7601. Architectural Graphics. (3).

Techniques of contemporary presentation applicable to architectural design with emphasis on advanced perspective and delineation. Computer applications and calibration table will be utilized for the theoretical procedures. Practical problems will be utilized to develop the creative capacities of mature students.

7602. Problems in Architectural and Construction Technology. (3).

Study and research of specialized problems in creating up-to-date structures and developing efficient construction methods. Project work oriented to the individual student in advanced areas of architectural or construction technology.

COMPUTER SYSTEMS TECHNOLOGY

6251. Assembly Language Programming. (4).

An investigation of a particular mini-computer from the programmers's view point. Topics include machine representation of data, instruction formats, machine operation and addressing techniques, input/output, and interrupts. Applications will include the use of minicomputers for numerical control and in sensor based systems. **PREREQUISITE:** Permission of Instructor.

6271. Computer Techniques. (4).

Advanced computer techniques in industry. Topics include APT programming for NC machine tools; application of the computer to solve PERT networks, and applications in production planning and control. **PREREQUISITE:** Permission of Instructor.

6831. Computer Technology I. (3).

Basic logic operations, Boolean algebra, and reduction techniques as related to both combinational and Sequential Systems. **PREREQUISITE:** Technology 2831 or permission of instructor.

CONSTRUCTION

6522. Construction Logistics. (3).

Theory and practice of construction project bidding using statistical concepts of probability and computer applications. Office procedures,

job and cost control, and the analysis of starting and completing construction contracts will be studied.

7103. Theory of Construction Technology. (3).

Survey of contemporary concepts involved in planning, production, fabrication, and erection. The interrelationship of construction materials and economic factors are also of consideration.

7105. Construction Planning and Scheduling. (3).

The study and practice of contemporary methods used in construction planning and scheduling. Emphasis will be on the Critical Path Method-CPM- in construction with computer application. Solution of actual problems will be stressed.

7106. Construction Equipment Cost Analysis. (3).

A thorough study of the different elements of construction cost — one being equipment. The annual cost, depreciation, replacement, and retirement of construction equipment. Benefit cost ratio. Income tax influence on buying of new equipment. Other aspects of construction cost. Computer application in the construction cost analysis.

DESIGN AND DRAFTING

7253. Technical Illustration. (3).

A study of the various media used by the technical illustrator to produce camera-ready art. The student will be required to display proficiency and mastery in the use of pen and ink illustrations.

7257. Machine Design. (3).

A course dealing with standard machine parts, sub-assemblies, and design problems. Each student will be required to design at least one simple machine.

7258. Tool Design. (3).

An introduction to the design and layout of cutting tools, gauges and similar tools. Mass production techniques are considered.

7261. Problems in Graphics. (1-4).

An intensive study of selected topics in design or drafting. Individual student initiative will be rigorously stressed.

ELECTRONICS

6832. Computer Technology II. (3).

An introduction to internal computer organization and configuration; component and device characteristics; data representation, transfer and storage. **PREREQUISITE:** Technology 4831, 6831 or permission of the instructor.

6833. Analog Computer Technology. (3).

Function of analog computer elements problems, preparation and representative solutions of program problems. **PREREQUISITE:** Technology 3831 or permission of the instructor.

800. Problems in Electronics. (3).

Individual study in any field covered by senior undergraduate courses as approved by advisor.

801. Precision Measurements. (3).

Review of electronic fundamentals and circuits precedes study of sensors, servos and analog devices, and the combination of these and other components into measuring instruments.

811. Technology of Electronic Communication Systems. (3).

Engineering and economic aspects in the design and operation of publicly and privately owned communication systems.

821. Advanced Microwave Techniques. (3).

Further investigation into lines, wave guides, oscillators, mixers and amplifiers operating in the microwave spectrum, emphasizing advanced techniques of testing and measuring performance of components and systems.

832. Advanced Digital Circuit Technology. (3).

Technology of logic circuits, counters and memory devices as used in modern digital computer systems. Practical measurement and maintenance techniques as applied to actual computer devices.

INDUSTRIAL ARTS

204. History and Philosophy of Industrial Arts Education. (3).

The historical developments of industrial education; types of programs, philosophies and trends as related to the total school program.

498. Curriculum Building in Industrial Arts Education. (3).

Theoretical background and experimental approach to curriculum improvement in industrial education on the elementary, junior and senior high school levels.

7596. Current Trends and Issues in Industrial Arts Education. (3).

Investigation of current laboratory arrangements, materials, supplies and methods in instruction compatible with the industrial education programs.

MANUFACTURING

460. Motion and Time Analysis. (3).

A study of methods improvements, motion economy, and the development of time standards by direct observation, predetermined time standards, and synthesis.

462. Inspection and Quality Control. (3).

Inspecting products and controlling the quality through the use of statistical techniques. Topics for study include administration of inspection,

tolerance systems, gaging, sampling inspection plans, frequency distributions, control charts for variables and control for fraction defective and defects per unit. **PREREQUISITE:** Management 3710 or Permission of instructor.

6464. Production Control. (3).

The planning and control of production with emphasis on intermittent and continuous manufacturing. Fields of study include forecasting, designing control forms, using visual controls, scheduling, dispatching, preplanning, and using critical path techniques.

6466. Plant Layout. (3).

A study of plant design with respect to material handling, machine location, auxiliary services, capital requirements, safety, and personnel organization.

6470. Human Performance Factors. (3).

Determining the most effective way to integrate the man and the task he is to perform by studying work procedure, workstation layout, and equipment design.

7401. Advanced Motion and Time Analysis. (3).

Advanced methods in time and motion study, balancing operations; learning curves, work sampling, memomotion and chronocyclegraph studies, fatigue effects, determination and application of elemental time data, statistical methods in time study.

7402. Advanced Quality Control. (3).

Advanced statistical methods applied to quality control problems, significance tests, correlation analysis, sequential sampling, analysis of variance, design of experiments, principles of reliability.

7404. Production and Inventory Control. (3).

The planning and control of inventory and production by means of statistical analysis of problems, simulation techniques, and mechanized execution of inventory and production control functions.

7406. Advanced Factory Layout and Materials Handling. (3).

A study of the redesign or renovation of existing or addition of new plant facilities, flow patterns, machine selection and location, estimate of unit costs, estimate of capital requirements.

7408. Production Processes. (3).

A coordinated study of manufacturing processes and equipment, operation sequence planning, economic aspects of equipment selection, tooling and processing a product from product design to final assembly for quantity production.

7410. Problems in Manufacturing. (3).

A study of specific manufacturing problems with emphasis on solution development for an actual

manufacturing situation. Problems will be selected through agreement of adviser and student.

7422. Machine Tools. (3).

Design fabrication and operation of tools and equipment in industrial and manufacturing operations.

7470. Advanced Human Performance Factors. (3).

Detailed study and directed research into specific man-machine and man-environment relationships with industrial applications
PREREQUISITE: Permission of instructor.

ENGLISH

PROFESSOR WILLIAM OSBORNE, *Chairman*

Room 464, Patterson Hall

The Department of English offers a program of study leading to the M.A. degree. When a student enters the program, he will consult with a departmental adviser to plan his course of studies.

The basic provisions of the program are as follows:

Prerequisites: A minimum of 18 semester hours in upper division English courses, with a minimum grade point average of 2.5 in those courses.

Requirements: A total of 33 semester hours for the student who elects not to write a thesis *or* a total of 30 semester hours for the student who chooses to write a thesis. At least 18 hours must be in English courses numbered above 7000.

Each student's program must include the following:

- A. Bibliography and Methods Research (3): English 7801.
- B. Chaucer *or* Studies in Medieval Literature (3): English 6231 *or* 7211.
- C. Studies in Shakespeare *or* Studies in Renaissance Literature (3): English 7231 *or* 7212.
- D. The literature of two additional periods of English *or* American literature (6).

To complete the 30-33 hours of course work required for a Master of Arts degree in English, a student must take 15-18 additional hours. Normally, English majors will elect to take these courses in English. In some instances, advisers may recommend that the student take one or more courses in an area other than English, such as philosophy, history, or a foreign literature. Such exceptions should, however, relate to the student's major interest and specific program.

Oral comprehensive examination.

Reading knowledge of French, German, Latin, or Greek to be demonstrated by (1) 12 hours credit at the minimum grade in each course of C, earned within the last five years prior to entry into the graduate school or by (2) reading examination by date of completion of 9 semester hours of graduate courses in English. Substitution of an alternate foreign language may be considered by the Graduate Studies Committee if the student demonstrates a thorough command of a language which will be essential in the development of his thesis.

Thesis (English 7996: 3 or 6 hours) — optional.

A 3.0 average in English courses.

For the collateral area, requirements in the Department of English are as follows:

Prerequisites A minimum of 12 hours in upper division English courses, with a minimum grade point average of 2.5 in those courses.

Requirements: A minimum of 12 hours in graduate English courses, at least 6 of which must be in courses numbered above 7000.

At least 3 hours in English literature before 1800 and 3 hours in English after 1800.

A 3.0 average in English courses.

Students not majoring in English must have at least 12 semester hours of upper division English courses with at least a 2.0 average in those courses as a prerequisite for taking any graduate course in English, except 7001.

6231. Chaucer. (3).

A study of Chaucer's growth as a literary artist, including a chronological reading of representative works and discussion of their philosophical and social context.

6234. Milton. (3).

A study of Milton's development as a literary artist, with emphasis on his poetry but with some attention to his prose.

6241. The English Novel. (3).

A study of major English novels from the Renaissance to the mid-nineteenth century related to study of the origin and development of the genre.

6242. The English Novel. (3).

Reading of major English novels from the mid-nineteenth century to the present, with attention to developments in the genre.

6251. English Drama. (3).

A study of the development of the genre in England from medieval times to 1642.

6252. English Drama. (3).

A study of English drama from 1660 to the present, with attention to developments in the genre.

351. American Drama. (3)

The development of American drama as a literary form studied in relation to the English and European tradition and to currents in American thought.

501. History of the English Language. (3).

Study of the relationship of English to other Indo-European languages; of etymology and the effects of word-borrowing, word-formation, and semantic change on English vocabulary; and of the development of English sounds, inflections, and syntax.

001. Language and Composition. (3).

This course, open only to high school English teachers, deals with linguistic principles and their application to English grammar and composition. There will be a strong emphasis on the writing and analysis of essays. This course cannot be applied toward a major or collateral area in English.

7211. Studies in Medieval Literature. (3).**7212. Studies in Renaissance Literature. (3).****7213. Studies in Seventeenth Century Literature. (3).****7214. Studies in Restoration and Eighteenth Century Literature. (3).****7221. Studies in the Literature of the Romantic Period. (3)****7222. Studies in Victorian Literature. (3)****7223. Studies in Contemporary Literature. (3).****7231. Studies in Shakespeare. (3).*****7321. Studies in American Literature before 1860. (3).*****7322. Studies in American Literature since 1860. (3).*****7501. Studies in English Linguistics. (3).****7701. Literary Criticism. (3).**

The major documents in Western criticism, from Plato to the present.

7801. Bibliography and Methods of Research. (3).

Examination of bibliographical aids for the study of English and American literature, problems involved in various types of research, and study of the presentation and documentation of scholarly writing.

†7996. Thesis. (3-6).

A prospectus for the thesis must be approved by the student's adviser and the department chairman before the student registers for this course. Formal application for writing a thesis must be filed with the Dean of the Graduate School at the time of registration. The completed thesis must be approved by at least two readers.

†Grades of S, U, or IP will be given.

*Courses designated *Studies* provide for specialized work in the literature and in the scholarship of periods, figures, and genres. Content and focus of *Studies* courses may vary from semester to semester. Students will be expected to engage in research leading to the production of substantial papers. Ideally they should have had previous work in the material of these courses. They should, in any case, enroll in *Studies* for which they have had some relevant preparation.

FINANCE, INSURANCE AND REAL ESTATE

PROFESSOR PETER F. FREUND, *Chairman*

Room 402, The College of Business Administration Building

the Department of Finance, Insurance, and Real Estate, qualified students may work toward the M.S. with a major in Finance or the M.B.A. with an area of concentration in Finance, Insurance, and Real Estate.

Requirements for the M.B.A. degree are summarized on page 29.

Prerequisites for the M.S. in Finance.

In addition to Core 1 prerequisites, students should have completed or complete all necessary prerequisites for the advanced course work.

Each candidate for the M.S. degree must complete a minimum of 33 semester hours and pass a written and/or oral examination. The 33 semester hours comprising the M.S. degree include 21 semester hours of approved work in the major (24 if a thesis is written) and 9 to 12 semester hours in collateral courses approved by the student's adviser. At least 24

of the 33 semester hours required must be in courses designated primarily for graduate students (7000 level or above).

6011. Law of Taxation and Planning of Estates. (3)

A survey course of the law of taxation as applied to the transmission of property by gift or death and its impact upon accumulations of wealth. Estate planning from an individual viewpoint designed to create, maintain and distribute the maximum estate possible. PREREQUISITE: FIR 3011 or consent of the instructor.

6310. Real Estate Law. (3).

This course covers law and legal instruments as applied to real estate. It is designed to serve the needs of property owners and those engaged in the real estate business. PREREQUISITE: FIR 3310.

6320. Real Estate Finance. (3).

Examination and analysis of the sources of funds for financing real estate transactions including FHA and VA types. PREREQUISITE: FIR 3310.

6330. Determinants in Housing Finance. (3).

Consideration of determinants of private and public demand for housing; the relations between construction and economic trends; new town legislation, urban renewal and development, improving environment and housing for low income groups, criteria for assessing public policy, policy implementation; the role of private enterprise in developing, maintaining and improving housing. PREREQUISITE: FIR 3310.

6340. Real Estate Appraisal. (3).

This course covers the fundamentals of appraising residential, commercial and industrial real estate. PREREQUISITE: FIR 3310.

6610. Cases in Managerial Finance. (3).

A case course emphasizing the application of tools and principles introduced in previous courses to develop up-to-date problem solving techniques. Cases are approached from the standpoint of top level management and utilize both quantitative and qualitative analysis. PREREQUISITE: FIR 4440 or consent of instructor.

6720. Operations and Management of Financial Institutions. (3).

Policy and decision-making as it relates to financial management problems pertaining to financial institutions. PREREQUISITES: ECON 3610 and FIR 3720 or their equivalent, or approval of the instructor. This course is not open to students who have received credit for FIR 4720.

6810. Property and Casualty Insurance. (3).

The form and functions of fire, marine, automobile, general liability, and other types of property and casualty insurance with emphasis on their application to commercial and industrial occupancies. A survey of current underwriting practice. PREREQUISITE: FIR 3810.

6820. Life and Health Insurance. (3).

The functions of life and health insurance with emphasis upon the need for insurance and the service of life and health insurance to the American family and community. A study of the mechanics of private and public insurance and annuities. PREREQUISITE: FIR 3810.

6840. Functional Aspects of Property and Liability Insurance Carriers. (3).

Company and industry functions other than contract, including rating, rate-making, reserves, auditing, underwriting, reinsurance, claims, production, engineering, and governmental supervision. PREREQUISITE: FIR 3810.

6860. Employee Benefit Plans. (3)

Group insurance, the essence of fringe benefits for employees; a study of group life insurance, group health and accident insurance, group pension and profit-sharing plans. PREREQUISITE: Business Law, FIR 3011, or instructor's approval.

7010. Fundamentals of Business Finance. (3).

An accelerated introductory course designed to acquaint the student with the basic principles of business finance encountered by the businessman. Course is acceptable for removing the business finance prerequisite for the M.B.A. and M.S. programs in the College of Business Administration. PREREQUISITES: Graduate standing—Accounting 7001 or Principles of Accounting.

7011. Business Environment and The Law. (3).

Legal procedure and the law of contract, sales, negotiable instruments, creditor's rights, agency, business organizations and property will be considered. Business environmental aspects of court decisions and administrative agencies respecting the regulation of business, taxation, antitrust law, labor law, tort law, consumer and environmental protection laws will be surveyed.

7301. Seminar in Real Estate Finance, Investments and Valuation. (3)

An investigation of significant current topics in real estate finance, investments and valuation. Individual research and group discussion of recent developments in theory and practice. PREREQUISITE: Consent of the instructor.

7302. The Decision Process in the Development of Commercial and Industrial Real Estate. (3).

Analysis of methodologies and market strategies in the evaluation of investments in commercial and industrial land development. To identify, conceptualize and to execute action programs associated with developing successful real estate projects. Land developments to be considered include office buildings, retail projects, industrial parks, warehouse-distribution centers, and related land uses. PREREQUISITES: Core 1 MBA courses or their equivalent; FIR 7301 or approval of instructor.

7610. Analysis and Control of Business. (3).

An overall study of the finance function of business; application of financial management techniques to acquiring and utilizing funds and controlling various phases of the business operation, with special attention to the integration of finance with other disciplines. PREREQUISITE: FIR 3410.

7620. Current Topics in International Finance. (3).

Study of selected problems in international finance, foreign investment and the international payments system; gold movements; foreign central banking and international

aspects of money markets; the impact of international financial problems on business and efforts at international financial cooperation. PREREQUISITES: FIR 3410; Economics 3610; or consent of instructor.

710. Seminar in Investments. (3).

Advanced study of the objectives of investment management. Consideration of the functions and procedures of security markets, money and capital markets and their instruments including investment banking, institutional portfolio selection, and government regulation of the organized securities exchanges and over-the-counter markets. PREREQUISITE: FIR 3710 or consent of the instructor.

720. Seminar in Current Topics in Finance. (3).

An investigation of significant current topics in theory and practice in the areas of domestic and international finance. Individual research and group discussion employing a wide variety of available materials are emphasized. PREREQUISITE: Consent of the instructor.

7810. Seminar in Theory and Practice of Financial Management. (3).

Survey of current, advanced literature dealing with the *development* of concepts and applications presented in the form of oral reports and turned in as a term paper. Cases would be required, concentrating upon complex financial topics. PREREQUISITE: FIR 7610.

7910. Problems, in Finance, Insurance, and Real Estate. (2-4).

Directed independent reading and research projects in the finance, insurance, or real estate areas selected by the student with approval of the staff member supervising.

†7996. Thesis. (3-6).

Candidates desiring to write a thesis must fill out an application on the approved form after consulting with the major professor. The application must be filed with the Dean of The Graduate School.

†Grades of S, U, or IP will be given.

FOREIGN LANGUAGES

PROFESSOR FRANKLIN O. BRANTLEY, *Chairman*

Room 375A, Winfield Dunn Building

In the Department of Foreign Languages, graduate students who select French or Spanish as a major area will be assigned a major adviser by the department chairman. This adviser is to be consulted in all matters concerning the student's program of study. It is the responsibility of the student to obtain from the department office copies of the information sheet for the Master of Arts Program and the Required Reading List or detailed descriptions of requirements.

Prerequisites: (1) A minimum of 18 upper division semester hours or its equivalent in the language of the major; (2) a reasonable proficiency in the language of the major; to be determined by the department prior to admission.

Requirements: (1) A total of 30 semester hours for candidates writing a thesis; (2) a total of 33 semester hours for candidates not writing a thesis; (3) nine semester hours may be taken in an approved collateral area; (4) at least 18 hours must be taken in 7000 level courses, and if a collateral area is elected, a minimum of 2 of these 18 hours must be in the major area; (5) a reading knowledge of an approved second language (other than English) to be demonstrated by examination prior to the completion of course work; (6) M.A. candidates in French or Spanish who are not native to English must demonstrate adequate control of English by examination prior to the completion of course work; (7) a comprehensive written examination after completion of all course work; (8) if a thesis is presented, an oral examination on the area of the thesis.

LINGUISTICS

7101. Introduction to Linguistics. (3).

Language families and dialects; problems in phonology, morphology, and syntax; structural linguistic theory and practice. Recommended for language teachers.

7201. Romance Philology. (3).

An introduction to Vulgar Latin and a study of its development into the modern Romance Languages.

FRENCH

0101. Reading French. (0).

A concentration on the development of reading ability. Intended primarily to prepare for graduate reading requirements.

0102. Reading French. (0).

A continuation of French 0101.

6301. French Phonetics. (3).

The theory and practice of French sounds; especially recommended for teachers of French.

6305. French Stylistics. (3).

Translations of English prose into French with an emphasis on style and grammar. Required of all graduate assistants in French and recommended for all French majors and teachers of French.

6431. The Nineteenth Century French Novel. (3).

The French novel from the Revolution to the twentieth century, treating the movements of Romanticism, Realism, and Naturalism as they are reflected in the works of such authors as Balzac, Stendhal, Flaubert, and Zola.

6432. The Twentieth Century French Novel. (3).

A general survey of the twentieth century French novelists, including Proust, Gide, Mauriac, Malraux, Sartre, Camus, Robbe-Grillet.

6451. The Nineteenth Century French Drama. (3).

French drama from 1800 to 1897, including Hugo, Vigny, Musset, Scribe, Augier, Labiche, Dumas, Crel, Becque, Maeterlinck, and Ros-tand.

6452. Twentieth Century French Drama. (3)

Principal dramatists of the present century, including Claudel, Giraudoux, Sartre, Camus, Anouilh, Mantherlant, Beckett, Ionesco, and others.

6471. Nineteenth Century French Poetry. (3).

French poetry from Lamartine to Mallarme.

6501. Applied French Linguistics. (3).

The application of modern linguistic theories to learning French.

6781. History of Criticism of French Literature. (3).

A study of the main theories of literary criticism from the Renaissance through the 20th Century, with an introduction to methods of research.

7401. Old French Language and Literature. (3).

Development of the French language from Latin to the early 13th Century. Readings include *La Chanson de Roland* and selections from the *romans courtois* of Chretien de Troyes, the *Lais* of Marie de France, *le Roman de la Rose*, *Aucassin et Nicolette*, and *le Roman de Renart*. History of the liturgical and comic theatre. Lyric poetry of Charles d'Orleans and Francois Villon.

7421. The French Renaissance. (3).

Changes in aesthetics, poetics, and philosophy as seen in the writings of l'Ecole Lyonnaise, the Pleiade, Rabelais, Montaigne, Calvin, Marguerite de Navarre, Etienne Jodelle, and Robert Garnier.

7425. Classicism Prior to 1660. (3).

Aesthetics and poetics of the baroque and preclassical periods. Selections from the writings of the precieux and baroque poets, Mairet, Routrou, Saint-Sorlin, Scarron, Sorel, Cyrano de Bergerac. The Theatre of Corneille; early comedies of Moliere.

7426. Classicism After 1660. (3).

The impact of Boileau and *l'Art poetique* in crystallizing the classical principles and pattern. Masterpieces of Moliere and Racine. Represen-

tative selections from masters of the other *genres* in this period of French literature.

7491. Seminar in French Literature. (3).

Introduction to research through investigation of limited scope. May be repeated for credit.

7492. Research in French Studies. (1-6).

May be repeated for credit toward the French major up to a maximum of six hours.

7531. The Age of the Enlightenment. (3).

Comprehensive study of literary trends and innovations within the major *Genres* as related to liberal ideas underlying the philosophy of Montesquieu, Voltaire, Diderot, Rousseau, and their contemporaries.

†7791. The Teaching of French. (1)

Required of all graduate assistants in French.

†7996. Thesis. (6).

The thesis in French carries six semester hours and must be approved by the candidate's thesis committee.

GERMAN**0101. Reading German. (0).**

A concentration on the development of reading ability. Intended primarily to prepare for graduate reading requirements.

0102. Reading German. (0).

A continuation of German 0101.

SPANISH**6301. Spanish Phonetics. (3).**

The sounds and intonation patterns of Spanish analysis and practice; comparison with the sounds and intonation patterns of English. Especially recommended for teachers of Spanish.

6302. Advanced Grammar. (3).

A thorough and systematic presentation of Spanish grammar with an emphasis on teaching. Required of all graduate assistants in Spanish and recommended for all Spanish majors.

6421. The Golden Age. (3).

A study of Spanish lyric poetry and drama of the sixteenth and seventeenth centuries.

6422. The Golden Age. (3).

A study of Spanish prose of the sixteenth and seventeenth centuries.

6423. Cervantes. (3).

A study of *Don Quijote* and the *Novelas ejemplares*.

6431. Contemporary Spanish Prose. (3).

A study of Spanish prose from the Generation of 1898 to present.

4432. Contemporary Spanish Poetry and Drama. (3).

A study of Spanish poetry and drama from the Generation of 1898 to the present.

501. Applied Spanish Linguistics. (3).

The application of modern linguistic theories to the learning and teaching of Spanish: recommended for teachers.

552. Spanish American Dream. (3).

Development of the drama in Spanish America, with an emphasis on the twentieth century. **PREREQUISITES:** Spanish 3411-3412 or one of Spanish 3511 and Spanish 3512.

5561. Spanish American Prose Fiction I. (3).

Development of the Spanish American novel and short story from their beginnings through the Mexican Revolution.

5562. Spanish American Prose Fiction II. (3).

The Spanish American novel and short story from the Mexican Revolution to the present.

5781. History of Criticism of Hispanic Literature. (3)

A study of the main theories of literary criticism from the Renaissance through the 20th century, with an introduction to methods of research.

7401. Old Spanish Language and Literature. (3).

An introduction to the general characteristics of medieval Spanish dialects and a study of medieval Spanish texts.

7421. The Picaresque Novel. (3).

Lazarillo de Tormes, *Guzman de Alfarache*, and other novels of the genre in the seventeenth century.

7431. Nineteenth Century Spanish Literature I. (3).

Romantic poetry and drama studies in the works of such writers as the Duke of Rivas, Espronceda and Jose Zorrilla. Post-romantic poetry and drama. Becquer: *Costumbrismo*. The romantic and historical novel.

7432. Nineteenth Century Spanish Literature II. (3).

The regional novel, the realistic novel and the naturalistic novel are studied in the works of such writers as Fernan Caballero, Valera, Pereda, Palacio Valdes, Galdos, and Blasco Ibanez. The poetry of Campoamor and Nune de Arce. The theatre. Orators and historians.

7482. The Modernist Movement. (3).

The characteristics and history of the Modernist Movement in Spanish America and in Spain. A study of the leading *modernists*, including Ruben Dario, Nervo, Lugones, and Rodo. Pre-Modernists and Post-Modernism.

7491. Seminar in Spanish Literature. (3).

Introduction to research through investigations of limited scope. May be repeated for credit.

7492. Research in Hispanic Studies. (1-6).

May be repeated for credit toward the Spanish major up to a maximum of six hours.

†7791. The Teaching of Spanish. (1).

Required of all graduate assistants in Spanish.

†7996. Thesis. (6).

The thesis in Spanish carries six semester hours and must be approved by the candidate's thesis committee.

†Grades of S, U, or IP will be given.

FOUNDATIONS OF EDUCATION

PROFESSOR CARLTON H. BOWYER, *Chairman*

Room 404, The College of Education Building

graduate study in the Department of Foundations of Education is designed to develop understanding of the socio-cultural, psychological, and evaluative influences upon the processes of teaching and learning. The Department of Foundations of Education offers degrees at the Education Specialist and Doctoral levels as follows:

Education Specialist—Curriculum and Instruction (Cultural Foundations).

Education Specialist—Curriculum and Instruction (Educational Psychology).

Education Specialist—Curriculum and Instruction (Research Methodology and Statistics).

The Education Specialist degree with the major in Curriculum and Instruction is offered by this depart-

ment with a concentration in any of three areas; (1) Cultural Foundations, (2) Educational Psychology, or (3) Research Methodology and Statistics.

This degree requires a minimum of 66 semester hours of graduate work that is approved by the candidate's Advisory Committee. A minimum of 27 semester hours is required in the major concentration, and a minimum of 15 semester hours is required in the collateral area outside the College of Education. A minimum of 9 semester hours must be in courses numbered 8000 or above. Basic courses required of all candidates include the following: EDFD 7001 or 8001, EDPS 7121 or 8121, EDRS 6511, EDRS 7521, EDRS 7541 or 8541, and EDUC 7401 or 8401. Further information pertaining to the Ed.S. degree may be obtained by contacting the chairman of the department.

B. Doctor of Education—Curriculum and Instruction (Cultural Foundations).

Doctor of Education—Curriculum and Instruction (Educational Psychology).

Doctor of Education—Curriculum and Instruction (Research Methodology and Statistics).

The Doctor of Education degree with the major in Curriculum and Instruction is offered by this department with a concentration in any of three areas; (1) Cultural Foundations, (2) Educational Psychology, or (3) Research Methodology and Statistics. A student who elects to concentrate in one of these three areas must include at least 6 semester hours of graduate work in each of the other two areas in his total doctoral program.

This degree requires a minimum of 99 semester hours of graduate work that is approved by the candidate's Advisory Committee. A minimum of 48 semester hours is required in the major concentration and a minimum of 27 semester hours is required in two collateral areas: 6 semester hours in a collateral area in the College of Education and 21 semester hours in a collateral area outside the College of Education. A minimum of 21 semester hours must be in courses numbered 8000 or above. In addition to the specific courses listed above as being for the Ed.S. degree, basic courses required of all doctoral candidates include the following: EDUC 8950 and any one of EDRS 8522 or EDRS 8542 or EDRS 8543. Further information pertaining to the Ed.D. degree may be obtained by contacting the chairman of the department.

Letters following each subheading are course prefixes used by the College of Education.

EDUCATIONAL FOUNDATIONS (EDFD)

6012. History of American Education. (3).

This course aims to trace, describe and evaluate the development and growth of educational practices, institutions, and theories in the United States from the colonial period to the present.

6042. Survey of Educational Systems in Latin America. (3).

This course examines the development of selected educational systems in Central and South America, determining how religious, economic, and political forces shaped educational policies and practices and how education in these systems differ from that in the United States.

6051. Anthropology and Education. (3). (Same as Anthropology 6051).

A study of the cultural transmission process with emphasis on identifying different behavioral, cognitive, and learning styles of various ethnic groups within American society and selected third world countries. Encounters of U.S. sub-cultural groups with the public education system are examined.

†6701-10. Workshops in the Foundations of Education.

Not more than nine semester hours of workshop credit can be applied toward a degree.

†6701. Workshop in the Social, Cultural, and Behavioral Characteristics of the Inner-City Learner. (1-3).

†6702. Workshop in the Social, Cultural, and Behavioral Characteristics of the Suburban-School Learner. (1-3).

7001- Foundations of Education. (3).

8001. This course includes a study of the historical philosophical, and social forces influencing modern American education.

7008- Special Problems in Cultural Foundations of Education. (1-3).

Individual investigation and report of a specific problem under the direction of a faculty member. **PREREQUISITE:** Permission of instructor.

7011. Educational Thought. (3).

8011. This is a study of the evolution of educational theories and philosophies with particular reference to their impact upon educational developments in the United States.

7012- History of Western Education. (3).

8012. This course traces through European history some of the more important educational problems of modern times as they have been affected by the social and political acts of history, by the contributions of some of the leading educational theorists, and by institutional practices.

7021- Philosophical Foundations of American

8021. Education. (3).

A critical examination of the basic principles of the major philosophy of education theories (e.g., Experimentalism, Perennialism, Essentialism, Reconstructionism, Existentialism), which have influenced the development of modern public education.

7022- Philosophical Analysis in Education. (3).

8022. A course designed to use philosophical techniques of logical and linguistic analysis with recognized problems of education. Some of the problems are: philosophy and theory in education; the activities of teaching; value theory and education; and knowledge, teaching, and learning.

7031- Social Foundations of Education. (3).

8031. This course is designed to study education as a cultural universal. It emphasizes the mutual influence of social institutions and education as well as the factors involved in the socialization of the student personality.

7032- Education in Urban Society. (3).

8032. A study of education in relation to the sociological and cultural dimensions of urban society. Major emphasis will be on the issues and problems of urban education and recent educational policy developments.

7034- Field Experiences in Urban Education. (3).

3034. Involves the student in active participation in social agencies, community action groups, or other organizations in the inner-city of a disadvantaged area. Field work is combined with a study of the social and ethnic make-up of such communities. Mores, customs, and values of minority groups will receive special emphasis.

7041- Survey of Educational Systems in Europe

3041. and Asia. (3).

This course offers a scientific study of educational systems in various cultures of Europe and Asia by exploring the relationships that exist between a given system and the philosophy, history, geography, and technology of the people. Special emphasis is placed on international understanding.

3033. Education and the Political System. (3).

A study of relationships between political ideas and functions in education with political dimensions of society. Focus will be on developing a theoretical framework through which the interactions of the school and political systems can be analyzed and evaluated.

EDUCATIONAL PSYCHOLOGY (EDPS)

3122. Management of Classroom Behavior. (3).

A study of psychological principles and paradigms that can be used by educators to cope with disruptive behavioral problems in the school setting. Emphasis is placed on the requirement that students in this course demonstrate competence in applying psychological principles in appropriate educational laboratory settings. **PREREQUISITES:** EDPS 2111 and EDPS 3121 or equivalent.

6701-10. Workshops in the Psychological Foundations of Education.

Not more than nine semester hours of workshop credit can be applied toward a degree.

6701. Workshop in the Psychological Effects of Teacher-Learner Interaction. (1-3).

6702. Workshop in Learning Problems in the Elementary School. (1-3).

6703. Workshop in Learning Problems in the Secondary School. (1-3).

7108- Special Problems in Educational Psychology. 7108. (1-3).

Individual investigation and report of a specific problem under the direction of a faculty member. **PREREQUISITE:** Permission of instructor.

7111- Child Psychology Applied to Education. (3).

7111. A study of major theories of child psychology and their implications for educational practices with the pre-school and elementary school child. The application of established psychological principles to child behaviors is emphasized by using such means as discussion, audio-visual media,

demonstrations, and school and other community laboratory experiences.

7112- Adolescent Psychology Applied to Education. 8112. (3).

Advanced academic and laboratory study of the psychological environments of adolescents. Particular emphasis is placed on behavioral antecedents and consequences in adolescents as these may relate to secondary school personnel or others who work with adolescents.

7121- Learning Theories Applied to Education. (3).

8121. A study of major theories of learning, current research on learning, and the implications of both for educational practice. The application of established principles of learning to practical educational problems is emphasized. Topics covered include motivation, cognition, retention, forgetting, problem-solving, and transfer as these relate to pupil and teacher personality development.

†7127- Practicum in Applied Learning 8127. in Higher Education. (3).

Seminar discussion and supervised practical experience in the application of psychological and educational procedures directed toward facilitation of learning in higher education. **PREREQUISITE:** Psychology 7210 or EDPS 7121.

7131- Mental Hygiene and the School. (3).

8131. Guidance for the teacher in working on her own personality development and a study of the mental hygiene of the child as affected by his total environment, past and present.

7132- Personality Variables in Classroom Teaching. 8132. (3).

A definitive study of the role of personality variables in the classroom with specific objectives for students (1) to demonstrate an understanding of the role of personality in the classroom; (2) to develop competency in identifying specific personality patterns in classroom situations; and (3) to develop competency in the use of systematic observation techniques.

7141- Techniques of Mental Measurement

8141. and Education Programming. (3).

A definitive study of intellectual functioning with specific objectives (1) to develop a competency in the appropriate administration of instruments designed to appraise intellectual and perceptual processes; (2) to develop competency in the psycho-educational interpretation of data obtained with these instruments; and (3) to apply these interpretations to various educational and learning programs. **PREREQUISITE:** Consent of instructor.

7151- Adaptive Instructional Models. (3).

8151. A survey of existing adaptive instructional models and optimization techniques. The core area focuses upon optional practice, concept acquisition, rule learning, and instructional allocation models. Dynamic programming,

natural language, and automation are included. Design and computer simulation will be incorporated throughout the course. PREREQUISITE: EDRS 7521.

7152- Techniques of Systematic Instructional Development. (3).

A study of the techniques of learning problem analysis, task analysis, behavioral entry assessment, behavioral objectives, criterion performance assessment, instructional strategies, materials implementation, field implementation, revision processes, and summative evaluation. The cognitive, instrumental, and practicum competencies will be required of the students. PREREQUISITE: EDRS 7521.

†7157-Practicum in Application of

8157. Instructional Systems Concepts. (3).

The practicum is designed to provide opportunities for applying instructional systems concepts in designing and developing strategies and procedures for accomplishing appropriate goals in established instructional programs in education and/or industry. PREREQUISITE: EDRS 7521 or permission of instructor.

8129. Seminar in Problems of Classroom Learning. (3).

A course designed for the advanced graduate student in Education who is particularly interested in investigating problems of classroom learning, with special attention directed to the application of learning theories to classroom procedures. PREREQUISITE: Permission of instructor.

RESEARCH METHODOLOGY AND STATISTICS (EDRS)

6511. Measurement and Evaluation. (3).

The principles underlying the construction of objective tests and the problems relating to the use and interpretation of school measurements by teachers and administrators, practice in the construction of new-type and essay tests, and in the elements of statistical procedure necessary for the interpretation of school measurements.

7518- Special Problems in Research

8518. Methodology. (1-3).

Individual investigation and report of a specific problem under the direction of a faculty member. PREREQUISITE: Permission of Instructor.

7521. Introduction to Educational Research. (3).

(formerly Educational Statistics and Research Methodology)

This course includes the kinds of research: documentary experimental, case study, descriptive. The student is expected to select a research topic and prepare an appropriate design for it. Functional statistics are included.

7531- Computer as a Research Tool. (3).

8531. A study of ways in which the computer can be used in research processes in education and the behavioral sciences. Emphasis will be given to

the capabilities and limitations of computers and their peripheral equipment in the collection, tabulation, and analysis of data. Experience in the utilization of various (statistical) library programs available in the University Computer Center (UCC) will be an important aspect of the course. PREREQUISITE: Introductory statistics and programming or permission of the instructor.

7541- Statistical Methods Applied to Education I. 8541. (3).

Use and interpretation of statistical methods in education. Instruction in the simpler statistical calculations, such as measures of central tendency, measures of variability, correlation techniques, and procedures in testing statistical hypotheses using educational data. Emphasis is given to the development of the ability to read and interpret statistical data.

8519. Seminar in Educational Measurement. (3).

Systematic investigation of advanced or current topics in the field of education measurement. PREREQUISITES: A course in measurement, a course in statistical methods, and permission of instructor.

8522. Advanced Educational Research. (3).

A study of the methods of philosophy, historiography and descriptive survey in the research processes in education. Attention is given to philosophical analysis, concepts and arguments, and historical method as these are related to course materials, and bibliographic aids in education.

8542. Statistical Methods Applied to Education II. (3).

A second course in educational statistics. Test of statistical inference, chi-square, simple analysis of variance and covariance, non-parametric methods, partial and multiple correlation, introduction to multi-variance analysis, and related topics. Emphasis is given to the assumptions, uses, and limitations of each statistic discussed. PREREQUISITE: EDRS 7541 or consent of the instructor.

8543. Research Design and Analysis. (3).

A study of single-factor and multi-factor designs using completely randomized or repeated measurements. Stress is given to the application of classical analysis of variance procedures to the interpretation of data and the testing of statistical hypotheses. Linear contrasts are studied, primarily as post-hoc procedures. PREREQUISITE: EDRS 7541 or equivalent.

8549. Seminar in Educational Statistics. (3).

Systematic investigation of current or advanced topics in the field of educational statistics. PREREQUISITES: An advanced statistical methods course and permission of instructor.

†Grades of S, U, or IP will be given.

GEOGRAPHY

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PROFESSOR PAUL HARDEMAN SISCO, *Chairman**Room 115, Johnson Hall*

In the department of Geography, graduate students who select Geography as a major area will consult their major adviser as to the program of study.

All graduate majors in the department must have credit for Geography 6111, 6121, and 7503 or their equivalents before being admitted to candidacy. In addition, before they receive the Master's Degree, they must complete either 7202 or 7212, 7461, and 7601.

Majors will attempt a thesis only with the recommendation of the graduate school faculty in the department. For the collateral area, nine semester hours as shown below:

A. M.A. Degree requirements — nine semester hours as approved by the adviser, with a maximum of 3 semester hours in the earth sciences.

B. M.S. Degree requirements — nine semester hours as approved by the adviser, with a minimum of six semester hours in the earth sciences.

6111. Earth Science I. The Atmosphere. (3).

An analytical study of the physical processes underlying the behavior and responses of the atmosphere and the application of this general body of knowledge to an understanding of the relationship of man to this important element of his environment.

6121. Earth Science II. The Earth. (3).

An analytical study of land forms, their changes and their uses to man.

6122. Earth Science III. The Soil. (3).

An analytical study of soils to include their physical, chemical, and biological qualities, and their classes, uses, and measures of conservation.

6131. Earth Science IV. The Oceans. (3).

An analytical study of the oceans to include their physical, chemical, and biological qualities; their movements, resources, climate influences, and their importance for transportation.

6304. Western Europe. (3).

A geographic analysis of the lands west of the Iron Curtain.

6305. The Soviet Realm. (3).

A regional analysis of the Soviet Union and its satellites.

6306. The Far East. (3).

A consideration of the significance of regional differences in Japan, China, and India, and a brief survey of the remaining areas.

6314. Geography of Mexico. (3).

A comprehensive and systematic survey of the geographical regions, resources, and poten-

tialities of Mexico and the significance they have for Mexico in the economic and political affairs of Latin America and the world.

6315. Geography of Brazil. (3).

A comprehensive and systematic survey of the geographic regions, resources, and potentialities of Brazil and the significance they have for Brazil in the economic and political affairs of Latin America and the world.

6316. The South. (3).

A study of selected regions in the South with emphasis on changes and trends in the cultural-physical complex.

6317. Tennessee. (3).

A comparison of the human-use, political, and physical regions of the state.

6521. Quantitative Methods. (3).

An introduction to quantitative methods in geographic analysis. PREREQUISITE: Permission of instructor.

†6611. Regional Field Study. (6).

A comparative study of selected regions of the world, including library study of the regions to be traversed, a minimum of sixteen days to study in the regions, and oral and written reports. PREREQUISITE: Permission of the instructor.

7121. Physiography of the United States. (3).

A survey of the natural regions of the United States, relating landform configurations to settlement patterns, resource distribution, and recreational facilities.

7202. Economic Geography: Agricultural. (3).

A survey of agricultural products and agricultural regions of the world, and the role of agriculture in economy.

7212. Economic Geography: Industrial and Commercial. (3).

An examination of industrial and commercial location theory and the systematic analysis of the spatial distribution of selected industrial and commercial activities.

7422. Political Geography. (3).

The content and philosophy of political geography as illustrated by a broad survey of major writers in the field followed by student analysis of individual nation-states.

7436. Seminar in Urban Geography. (3).

An analysis of the spatial aspects of urban development.

7441. Population Geography. (3).

A survey of the density, distribution, migrations, trends, and settlement patterns of world population.

7453. Individual Research. (3).

Individual supervision under a member of the graduate faculty on a topic within the student's major field of interest.

7461. Development of Geographic Thought. (3).

A course vital in acquainting the serious minded geography student with the various types and sources of geographic literature, its nature and content, and the growth and development of geographic thought.

7471. Cultural Geography. (3).

A systematic analysis of the manner in which selected culture traits interact with other patterned phenomena to produce distinctive geographic landscapes. Individual student study on selected problems is an integral part of this course.

7503. Advanced Cartography. (3).

A study of the ways by which data are presented and interpreted through maps, charts, graphs, and tables.

7522. Advanced Quantitative Methods. (3).

The application of multivariate statistical models, special statistics, and computer techniques to modern geographic research problems. PREREQUISITE: Geography 4521 or the permission of the instructor.

7601. Seminar in Regional Geography. (3).

Regional and/or systematic analysis of selected areas in Africa, Anglo-America, Latin America, Europe, The Soviet Realm, or the Far East. May be repeated for a maximum of 6 credits. (Region will be specified in *The Schedule of Classes*).

7602. Seminar in Climatology. (3).

Systematic study of the classification and distribution of climates. PREREQUISITES: Geography 6111.

7609. Seminar in Historical Geography. (3).

Individual and/or group analyses into the historical geography of either regions or topics.

7621. Special Problems. (1-3).

(May be repeated for a maximum of 9 credits). Independent investigation of a research problem selected in consultation with the instructor.

†7996. Thesis. (3-6).

A student registering for this course must have demonstrated, to two or more members of the geography staff, superior ability in the field of geographic content and in the organization and presentation of subject matter. Application for writing a thesis must be filled out on an approved form after consultation with the major professor and filed with the Dean of The Graduate School at the time of registration. PREREQUISITE: Approval of supervising teacher and department chairman.

†Grades of S, U, or IP will be given.

GEOLOGY

PROFESSOR RICHARD W. LOUNSBURY, *Chairman*

Room 312, Engineering Building

In the division of Geology, graduate students who select Geology as a major area will consult their major adviser as to the program of study; however, Geology 7996 is required of all those who major in Geology.

6100. Petroleum Geology. (3).

Application of geologic principles to the search for economic accumulations of oil and gas. Emphasis on prospect selection via subsurface techniques. PREREQUISITES: Geology 3512 and 3712.

Two lecture, two laboratory hours per week.

6121. Optical Crystallography. (3).

The principles and methods of study of optical crystallography. The use of the polarizing microscope in the identification of minerals by the immersion methods. PREREQUISITE: Geology 2311 or 2312.

Two lecture, two laboratory hours per week.

6202. Geomorphology. (4).

The origin and characteristic of land forms and physiographic provinces based on a consideration of geologic processes and geologic structure. Descriptive and basic quantitative approaches to the effects of weathering, mass-wasting, fluvial, glacial, wind and marine processes on the earth's surface. Laboratory study of maps and aerial photographs. PREREQUISITE: Consent of instructor.

6301. Geostatistics. (3).

Application of statistical techniques to selected geological problems. Hypothesis testing, regression, correlation, time trend analysis, curve fitting. Markov chains, etc. A problem oriented course. PREREQUISITE: Senior standing in geology or consent of the instructor.

6312. Introduction to X-ray Diffraction. (3).

The basic principles of the x-ray diffraction. Its application to crystallographic and mineralogic

problems including mineral identification by the powder method. **PREREQUISITE:** Permission of the instructor.

6322. Microscopic Petrography. (4).

Classification, description, and thin-section study of rocks by means of the petrographic microscope. **PREREQUISITE:** Geology 6121.
Two lecture, four laboratory hours per week.

6332. Introduction to Geochemistry. (3).

Study of the geological and chemical processes which govern or control the migration and distribution of the elements and atomic species in the earth in space and time. **PREREQUISITE:** Consent of instructor.
Three lecture hours per week.

6411. Micropaleontology. (3).

A study of microscopic fossils. Morphology, classification, evolution, and stratigraphic distribution of some of the more common groups. Photomicrography and laboratory techniques in preparing micro-fossils for study. **PREREQUISITE:** Consent of instructor.
Six laboratory hours per week.

6421. Stratigraphic Paleontology and Paleocology. (3).

Concepts and methods of biostratigraphy and paleocology. The importance of ancient organisms as contributors to sedimentation, indicators of environment, and guides to correlation of strata. **PREREQUISITE:** Geology 3712.

6511. Economic Mineral Deposits. (3).

Origin, occurrence, and composition of metallic and non-metallic mineral deposits. **PREREQUISITES:** Geology 2312 and 2512 (Mineralogy).
Three lecture hours per week.

6523. Igneous and Metamorphic Petrology. (3).

Selected topics relating to the origin and evolution of igneous and metamorphic rocks.
Three lecture hours per week.

6601. Engineering Geology. (3).

The application of the principles and knowledge of geology to engineering practice, especially in highway construction, dam sites, foundations, water resources and location of certain engineering materials. **PREREQUISITE:** Consent of instructor.

6622. Geology Field Camp. (6-8).

Mapping of the structure and lithology of a prescribed geologic area. To be offered during the summer. Course may be taken at a college field camp offered by other schools subject to approval of major advisor. A special problem will be assigned over and above the work required by undergraduates.

6632. Applied Geophysics. (4).

A survey of geophysical methods that emphasizes seismic and electrical investigations

employed in engineering practice. The use of resistivity and seismograph in the investigation of subsurface materials, the location of sand, gravel and subsurface water are discussed and will be supplemented by field measurements with these instruments.

6701. Spring Field Trip. (1-2).

Conducted field trip to Ouachita-Arbuckle-Wichita mountains of Oklahoma during spring vacation. About 30 hours of field work will follow 2-4 hours of lectures. Open to non-majors. **PREREQUISITE:** Consent of instructor.

6702. Spring Field Trip. (1-2).

Conducted field trip to Ouachita, Ozark dome and adjacent mineral districts during spring vacation. About 30 hours of field work will follow 2 to 4 hours of lectures. Open to non-majors. **PREREQUISITE:** Consent of instructor.

6703. Spring Field Trip. (1-2).

Conducted field trip to central and southern Appalachians during spring vacation. About 30 hours of field work will follow 2 to 4 hours of lectures. Open to non-majors. **PREREQUISITE:** Consent of instructor.

6704. Spring Field Trip. (1-2).

Conducted field trip to the Gulf Coastal Plain during spring vacation. About 30 hours of field work will follow 2 to 4 hours of lectures. Open to non-majors. **PREREQUISITE:** Consent of instructor.

6705. Spring Field Trip. (1-2).

Conducted field trip to the Upper Mississippi Valley and Lake Superior District during spring vacation. About 30 hours of field work will follow 2 to 4 hours of lectures. Open to non-majors. **PREREQUISITE:** Consent of instructor.

7101. Geological Instrumentation. (2).

Use of instrumentation in the geology department. Instrument use, care, and safety. Sample preparation, interpretation of results. **PREREQUISITE:** Consent of instructor.
One lecture, two laboratory hours per week.

7311. Advanced Physical Geology. (3).

Development of the earth with emphasis on the pros and cons of the New Global Tectonics and Continental Drift. Plots the relationship between diverse aspects such as vulcanism, climate, continent and sea floor topography, earthquakes, etc.
Three lecture hours per week.

7312. Advanced Historical Geology. (3).

Geotectonic development, stratigraphic and life history of the North American continent with special emphasis on the United States. **PREREQUISITE:** Consent of instructor.
Three lecture hours per week.

7321. X-Ray Diffraction Techniques. (3).

The application of x-ray diffraction techniques to crystallographic problems. PREREQUISITE: Consent of instructor.

One lecture, four laboratory hours per week.

7331. Advanced Geochemistry. (3).

Study of selected topics, particularly mineral phase equilibria, geochronology, trace element and isotope distribution. PREREQUISITE: Geology 6332 or consent of instructor.

Three lecture hours per week.

7340. Clay Mineralogy. (3).

The origin, occurrence and properties of well-crystallized and fine-grained layer silicates and related minerals are discussed in terms of their chemical and structural variations. PREREQUISITE: Consent of instructor.

7352. Sedimentary Petrology. (4).

Examination of sedimentary rocks in the field, in hand specimen, and through the microscope with the view of explaining sedimentary rock classification, the post depositional changes that occur in sediments and the bearing of these factors on geology as a whole. PREREQUISITE: Consent of instructor.

†7360. Advanced Study in Mineralogy and Crystallography. (1-4).

Directed laboratory or field research project selected in consultation with instructor. Report required. Hours and credits to be arranged.

†7370. Advanced Study in Petrology. (1-4).

Directed laboratory or field research project selected in consultation with instructor. Report required. Hours and credits to be arranged.

7411. Advanced Micropaleontology. (3).

Taxonomy, morphology, ecology and stratigraphic distribution of micro-organisms with emphasis on the Foraminifera and the Ostracoda. PREREQUISITE: Geology 6411 or consent of instructor.

Six laboratory hours per week.

7421. Stratigraphic Paleontology. (3).

Discussion of paleoecologic and biostratigraphic principles and ideas. PREREQUISITE: Consent of instructor.

Three lecture hours per week.

†7440. Advanced Study in Paleontology. (1-4).

Directed laboratory or field research project selected in consultation with instructor. Report required. Hours and credits to be arranged.

†7510. Advanced Study in Geotectonics. (1-4).

Directed laboratory or field research project selected in consultation with instructor. Report required. Hours and credits to be arranged.

7551. Mineralogy. (3).

Identification of ore minerals in polished sections by microchemical tests under the ore microscope. Interpretation of the textural relations and the determination of paragenesis. PREREQUISITE: Consent of instructor.

Six laboratory hours per week.

7631. Seminar in Geology. (1).**7641. Seminar in Geology. (1).****7651. Seminar in Geology. (1).****7661. Seminar in Geology. (1).****†7996. Thesis. (6).**

The following courses are open *ONLY* to graduate students who are enrolled in the Master of Science in Teaching program. The courses offered will provide an adequate background for teaching geology at the secondary level.

7011. Earth Materials—Minerals and Rocks. (3).

The composition and physical properties of the materials which make up the solid earth. The identification and classification of simple rock types and the important minerals which make up the common rocks.

Two lecture, two laboratory hours per week.

7022. Geotectonics. (3).

Study of the structural framework of the earth. The form and arrangement of the rock masses which make up the crust of the earth.

Three lecture hours per week.

7031. Principles of Historical Geology. (3).

A study of the methods of interpreting earth history from the sedimentologic and paleontologic record, and a review of the geological and biological events which have led to the present distribution and configuration of continents and oceans, and the form and distribution of life.

Two lecture, two laboratory hours per week.

7041. Geomorphology for Teachers. (3).

Interpretation and origin of the earth's relief features. Geomorphic processes. The fluvial cycle and its landforms. Landforms developed by glaciation, the wind and volcanic activity. Geomorphic features in limestone areas and folded and faulted areas. Physiographic provinces of the United States.

7061. Earth Science Seminar for Teachers. (2).

†Grades of S, U, or IP will be given.

GUIDANCE AND PERSONNEL SERVICES

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PROFESSOR ROBERT E. DAVIS, *Chairman*

Room 123, Patterson Building

The prefix used by the department is GUID.

The Department of Guidance and Personnel Services offers degrees at the Master's, Specialist, and Doctoral levels. Majors at the Master's level include the M.Ed., Guidance and Personnel Services (Elementary School Counseling and Guidance); M.Ed., Guidance and Personnel Services (Secondary School Counseling and Guidance); and M.Ed., Guidance and Personnel Services (General Counseling and Guidance). At the specialist's level, the department offers the Ed.S. in Guidance and Personnel Services. The terminal degree is the Ed.D., Guidance and Personnel Services (Student Personnel Services).

A. Master of Education, Guidance and Personnel Services (Elementary School Counseling and Guidance). Courses Required: GUID 7611*, 7631, 7651, 7662, 7682 and 7692 or 7697; EDRS 7521; one of the following - HMEC 7301, EDPS 7111, or PSYC 7207. The student will be required to take 9 semester hours outside the College of Education in a supporting field. If the course work for the student's teaching endorsement area, excluding elementary education, (home economics, physical education, special education, etc.) is offered in the College of Education, the 9 hours may be taken within the College. Total: 33 semester hours.

B. Master of Education, Guidance and Personnel Services (Secondary School Counseling and Guidance). This program leads to certification as a secondary school counselor. Courses Required: GUID 7611*, 7631, 7651, 7661, 7681, and 7691 or 7696; EDRS 7521; EDPS 7112; EDUC 7401** The student will be required to take 9 semester hours outside the College of Education, including 6 semester hours in vocationally oriented courses which incorporate practical experiences. If the student can provide evidence of two years satisfactory non-school work experience, he may take the nine hours in a supporting field or in his teaching endorsement areas. If the course work for the student's teaching endorsement areas, excluding elementary education, (home economics, physical education, special education, etc.) is offered in the College of Education, the nine hours may be taken within the College. Minimum: 33 semester hours.

NOTE: Candidates without teaching certificates must take 6 hours of upper division or graduate courses in educational psychology, philosophy of education, and/or sociology of education. Persons with undergraduate majors or minors in sociology, psychology, or philosophy are exempt from this requirement.

C. Master of Education, Guidance and Personnel Services*** (General Counseling and Guidance). The General Counseling and Guidance degree is a service degree, designed for employment counselors, ministers, and others outside the field of education who need skills in guidance and counseling but for whom such a program is not readily available. Prerequisites for admissions to the program are six semester hours of course work at the upper division undergraduate or graduate level in psychological,

historical, sociological, or philosophical foundations. Courses Required: GUID 7612*, 7631, 7651, 7661, 7681, and 7693 or 7698; EDRS 7521. The student will be required to take 9 semester hours outside The College of Education in a supporting field. Total 33 semester hours.

D. Education Specialist, Personnel Services (Counseling and Guidance). Requirements: 36 semester hours in the major concentration, 9 semester hours of collateral work in the College of Education, EDRS 7521, 8541, and ****15 semester hours of supportive work outside the College of Education. Any area approved for graduate study will be acceptable for collateral work, so long as it contributes to the student's program. No area will be acceptable unless it meets with the approval of the candidate's committee. Additional information pertaining to specific course requirements in the major and collateral areas may be secured from the Department of Guidance and Personnel Services. Minimum total: 66 semester hours of graduate credit with a minimum of 9 semester hours selected from courses numbered 8000 or above.

E. Doctor of Education, Personnel Services (Student Personnel Services). Requirements: 48 semester hours in the major concentration, 15 semester hours of collateral work in the College of Education, EDUC 8950, EDRS 7521, 8541, and 8522, or 8542 or 8543, one additional course in Foundations of Education and ****21 semester hours of supportive work outside the College of Education. Any area approved for graduate study will be acceptable for collateral work, so long as it contributes to the student's program. No area will be accepted unless it meets with the approval of the candidate's committee. Additional information pertaining to specific course requirements in the major and collateral areas may be secured from the Department of Guidance and Personnel Services. Minimum total: 99 semester hours of graduate credit with a minimum of 21 semester hours selected from courses numbered 8000 or above.

GUIDANCE AND PERSONNEL SERVICES (GUID)

†6691. Practicum in Residence Hall Staff Counseling and Advising. (3).

Practical experience for residence hall staff will be provided. The practicum deals with individual and group activities in counseling, advising, communication, and leadership. Concerns such as drug abuse, family planning information, and student discipline will be considered. It utilizes interdepartmental disciplines.

†6770-79. Workshops in Guidance.

Designed to offer continuing growth to the professional in the field of guidance and counseling. Experiences include application and study in the field designated by the specific workshop number. The student is expected to develop appropriate skills and attitudes.

- †6773. Workshop in Group Processes. (1-3).
- †6774. Workshop in Community Services. (1-3).
- †6775. Workshop in Student Appraisal. (1-3).
- †6776. Workshop in Career Guidance. (1-3).
- †6777. Workshop in Pupil Personnel Services. (1-3)
- †6778. Workshop in Counseling. (1-3).
- †6779. Workshop in College Student Personnel Services. (1-3).

*Not required if an equivalent course was taken at the undergraduate level. (Substitutions must be approved by the advisor).

**Not required for candidate with valid Tennessee Certificate.

***NCATE does not accredit programs for non-certified personnel nor programs in higher education.

****If the course work for the student's teaching endorsement area excluding elementary education, (Home Economics, Physical Education, etc.) is offered in the College of Education, this work may be taken within the College of Education.

7611. Procedures, Administration, and Organization of Guidance Services in Schools. (3).

Exploration of history, principles, organization and administration of guidance services in schools. Selected activities assist students in development of interpersonal skills, and in identifying services, roles and relationships of personnel. Students will demonstrate understanding of guidance services, competency in basic communication skills and flexibility in dealing with people.

7612. Introduction to Counseling and Guidance in Community Agencies. (3).

Roles and objectives, organization and administration, and implementation of guidance services in community agencies. Human relations experiences provide personal growth and skills in interpersonal relationships. Students are expected to demonstrate an understanding of guidance services, skill in helping others, and the ability to communicate.

7613- Student Personnel Services in Higher Education. (3).

This course will analyze the activities, functions, relationships, and philosophy of the Dean of Students, Dean of Men, Dean of Women and the Director of housing activities, scholarship and loans, admissions and records, health services, and the counseling center.

- 7622- College Students and College Cultures. (3).**
- 8622.** Study of characteristics, developmental needs and differing life patterns of college students. Student will demonstrate an ability to measure and interpret characteristics of campus environments and the interactions between academic-community sub-cultures.

7631. Group Process as Applied to Guidance. (3).

The organization and maintenance of effective groups. Group participation, projects and readings are planned to aid the student in delineating his role in various group settings. The student is expected to demonstrate an understanding of group dynamics, utilize various group techniques, and interact effectively in groups.

7651- Diagnostic Techniques in Guidance. (3).

8651. The basic principles, tools and skills of diagnosis. Supervised experiences and performance-based activities related to the use of diagnostic techniques will be emphasized. The student will demonstrate skills in the selection, use, interpretation and application of tools appropriate for group and individual appraisal.

7661- Educational and Occupational Information.

8661. (3). The process of career development. Attention is given to the selection and use of information sources, career choice counseling and decision making related to educational and occupational choice. Students are expected to demonstrate the knowledge and skills needed to assist adolescents and adults involved in career choice and development.

7662- Career Development in the Elementary School. (3).

The effective use of human resources in the world of work. Selection and use of instructional materials and field experiences related to career development are emphasized. Students are expected to demonstrate knowledge and skills needed to support career awareness and exploration in grades K-9.

7681- Theories of Counseling. (3).

8681. Client-centered, behavioral and related theories. Practice in counseling and experiences to help counselors understand themselves are included. Students are expected to demonstrate an understanding of theory, to establish helping relationships, and to interact effectively in counseling.

7682- Theories of Counseling, Consulting and

8682. Coordinating in the Elementary School. (3). Client-centered, behavioral, and related theories. Experiences include exercises in counseling, consulting, and coordinating with a focus on the elementary school. Students are expected to demonstrate proficiency in appropriate relationships and in understanding of related theory.

†7691-Supervised Practicum in Guidance and

8691. Counseling in the Secondary School. (3).

An opportunity to work directly with adolescents in counseling procedures. Major areas of concentration are individual and group relationships. The practicum student is expected to demonstrate the ability to provide assistance in educational, occupational, and personal decision-making. 135 contact hours. PREREQUISITE: Departmental Approval.

†7692-Supervised Practicum in Guidance and 8692. Counseling in the Elementary School. (3).

Supervised counseling and guidance with elementary-age children. Group discussions and individual interviews furnish the student with opportunities to interact with elementary-age children in a variety of settings. The student is expected to demonstrate an understanding of appropriate techniques and the capacity to interact productively with elementary children. 135 contact hours. PREREQUISITE: Departmental Approval.

†7693-Supervised Counseling Practicum in 8693. Community Agencies. (3).

Supervised counseling in one or more community agencies. Tapes, observation, and interviews of students' techniques are studied and critiqued by the supervisor. Students are expected to demonstrate counseling expertise and skill in interpersonal relationships. 135 contact hours. PREREQUISITE: Departmental approval.

†7696-Internship in Secondary School Counseling 8696. and Guidance. (6).

A full-time experience, salaried or non-salaried, in counseling and guidance in a selected secondary school. The student will perform in all guidance services for a minimum of 600 contact hours. Demonstrated effectiveness is required in each service area.

†7697-Internship in Elementary School 8697. Counseling and Guidance. (6).

A full-time experience, salaried or non-salaried, in counseling and guidance in a selected elementary school. The student will perform in all guidance services for a minimum of 600 contact hours. Demonstrated effectiveness is required in each service area.

†7698-Internship in General Counseling. (6).

8698. A full-time experience salaried or non-salaried, in counseling and guidance in an appropriate community service agency. The student will perform in all the agency's guidance services for a minimum of 600 contact hours. Demonstrated effectiveness is required in each service area.

7993. Special Problems in Guidance. (1-3).

Individual investigation and report in the area of guidance under the direction of a faculty member.

†7996.Thesis. (3-6).

Only students with superior scholarship are permitted to register in this course. The student must present in writing an outline describing the proposed thesis. This outline, when approved by the faculty members, is submitted to the Chairman for his approval. This course will involve writing the thesis and will emphasize the adequate setup of the problem, the collection of the data, their use, and conclusions to be reached.

Application for writing a thesis must be filled out on an approved form after consultation with the

major professor, and filed with the Dean of The Graduate School at the time of registration.

†8000.Education Specialist Thesis. (3-6).

Individual study of a research problem, closely related to the student's field of major concentration.

†8001.Education Specialist Field Study. (3-6).

Individual study of a significant problem in a local school system. The study shall be closely related to the student's field of major concentration.

8621. Guidance for the Student With Special Characteristics. (3).

Characteristics of the culturally deprived, the gifted, and the underachieving student will be discussed. The course will emphasize approaches and problems of assisting these students in emotional development and in educational and vocational planning. A project with students in one of the above classifications will be required. PREREQUISITE: Fifteen semester hours of credit in guidance and personnel services or consent of the instructor.

8631. Advanced Group Processes for Counselors. (3).

Advanced study of group processes as applied to counseling, guidance, and student personnel work. Activities, functions, and dynamics of groups will be studied. Actual experience with group work will be included in the course. PREREQUISITE: Fifteen semester hours of credit in guidance and personnel services or consent of the instructor.

8671. Operation of Guidance and Personnel Services. (3).

This course will consider the problems of the guidance or personnel services staff member who is responsible for administering the program. Attention will be given to the services themselves and to the principles, techniques, planning, organizing, staffing, directing, and budgeting of these services. PREREQUISITE: Fifteen semester hours of credit in guidance and personnel services or consent of the instructor.

8672. Seminar in Counseling and Guidance. (1-3).

A seminar devoted to current concerns and methodology in guidance and counseling courses. May be repeated for a maximum of nine semester hours credit. PREREQUISITES: Fifteen semester hours of credit in guidance and personnel services or consent of the instructor.

8673. Seminar in Student Personnel Services (Higher Education). (3).

Designed for students planning to enter the field of student services in higher education, this seminar course utilizes the expertise of the student personnel staff and covers the functions of the student personnel division. Must be taken as a prerequisite to GUID. 8693.

8683. Seminar in Counseling and Personnel Services Research. (3).

This course is designed to give the advanced graduate student in guidance and personnel services the opportunity to explore present research and research methodology in areas of current importance and personal interest and to begin to carry out research of his own. PREREQUISITE: Fifteen semester hours of credit in guidance and personnel services or consent of the instructor.

†8694. Advanced Practicum in Counseling. (3).

The advanced practicum in counseling is designed to increase the competency of practicing counselors. Course work will consist of critical analysis of actual counseling interviews, including both individual and group sessions. Various methods will be employed for recording and observing counseling sessions, such as audio and/or video tapes and one-way vision screens. Counseling attitudes, techniques, and

ethics will be considered. PREREQUISITE: GUID 7691, 7692, or appropriate counseling experience.

†8695. Supervised Practicum in Student Services in Higher Education. (3-6).

Supervised experiences in one or more of the following areas: residence hall, activities, admissions, records, organizations, financial aids, and administration. A seminar will be included. PREREQUISITE: Fifteen semester hours of credit in guidance and personnel services or consent of the instructor. Courses may be repeated for a maximum of 9 semester hours.

†9000. Doctoral Dissertation. (3-12).

Credit may be earned over a period of several semesters. The dissertation may be an organized scientific contribution or a comprehensive analysis of theory and practice in a specific area.

†Grades of S, U, or IP will be given.

HEALTH, PHYSICAL EDUCATION AND RECREATION

PROFESSOR RALPH L. HATLEY, *Chairman*

Room 211, Field House

In the Department of Health, Physical Education, and Recreation, graduate students may place a major emphasis in the areas of Health, or Physical Education or Recreation. Requirements: A total of 33 semester hours is needed for graduation, of which 21-24 semester hours are required for the major and 9 to 12 hours in the collateral area are as follows:

Health (School) - HLTH 7162, 7172, 7802, PHED 7204; one of the following: HLTH 6602, 6702, 7142; and electives (6 to 9 semester hours).

*Health (Community) - HLTH 6602, 6702, 7712, PHED 7204; one of the following: HLTH 7124, 7162, 7172, 7802; and electives (9 to 12 semester hours).

Physical Education - PHED 7103, 7123, 7163, 7204, 7404 and electives (6 semester hours).

*Recreation - RECR 6405 or 7505, 7145, 7305, 7405, and PHED 7204 and electives (6 semester hours).

The successful completion of an oral and/or written examination is required.

Minimum state teacher certification requirements must be met prior to admission to regular graduate work in either Health or Physical Education programs for certified personnel. In the areas of Recreation and Health *(non-teaching), certification does not apply. Prior to admission to non-certificated programs, the student must complete at least 6 semester hours in upper division undergraduate or graduate courses in psy-

chological, historical, social or philosophical foundations. For the collateral area, 9 semester hours must be selected outside the College of Education.

*NCATE does not accredit programs for non-certificated personnel.

HEALTH (HLTH)

The prefix used by the department of Health, Physical Education, and Recreation for courses in Health is HLTH.

†6202-20. Workshops in Health. (1-6).

Special study of selected phases of health education through group study. Designed for indepth study of areas of interest and need for persons in health education and related fields.

†6202. Workshop in School and Community Health. (1-3).**6302. Observation in Community Agencies. (3).**

This course is planned to introduce the student to a wide variety of community health and welfare agencies. Opportunity to visit in official and volunteer agencies is provided. Purpose, objectives, functions and programs are presented by representatives in each agency. Application for the course should be made at least 60 days before the student desires to enroll in the course. PREREQUISITE: Permission of Chairman of Department.

6602. Organization and Administration in Health. (3).

A study of the basic functions, principles and procedures of organization and administration as applied to health. Emphasis is placed on relationship and responsibilities of personnel in planning, promoting, and improving and evaluating the total health activities in the family-centered health services. Legal and legislative aspects of health activities are included.

6702. Trends and Problems in Public Health. (3).

A review of the historical development and current trends in community health; the various needs and demands for medical care; the contributions of the professional personnel in providing for total health services and education.

7122. Current Readings in Health. (3).

Directed independent readings in the area of health. Materials selected to strengthen areas of study. PREREQUISITE: Consent of instructor.

7142. Seminar in Health. (1-3).

(May be repeated for a maximum of 9 credits). Special study of selected current problems in this area. For the most part, individual studies will be pursued with group analysis and discussion at regular class meetings. PREREQUISITE: Consent of instructor.

7152. Special Problems in Health Education. (1 - 3).

This course is designed to afford opportunity for prospective or in-service school and professional personnel to work individually or in groups in carrying out a research project.

7162. Curriculum Construction in Health. (3).

Designed to explore factors involved in attaining a sound curriculum, to use the conceptual approach in curriculum development, to recognize curriculum problems, and to develop criteria for evaluating programs.

7172. School Health Education. (3).

A study of the history, principles, problems and trends of School Health Education.

7702. Sociological Health Issues. (3).

This course focuses on the most critical health issues facing our nation today, namely: alcohol, tobacco, drugs, venereal disease, sex education, cancer, heart disease, mental illness, etc. Stress is placed on the role of the parent, teacher, administrator, and community in relation to these problems. Lectures are presented by authorities in each of the critical areas selected for study.

7712. Epidemiology: Descriptive (3).

An introduction to a study of selected diseases of special concern in public health practice with emphasis on role of education in disease control.

7802. Construction and Analysis of Health Tests. (3).

The principles of construction, selection, and analysis of teacher made written achievement tests in the field of health education will be presented. The availability, selection, and analysis of standardized tests in these areas will also be discussed. A project is required to apply the principles involved.

†7996.Thesis. (3-6).

Application for writing a thesis must be filled out on an approved form after consultation with the major professor and filed with the Dean of The Graduate School.

PHYSICAL EDUCATION (PHED)

The prefix used by the department of Health, Physical Education, and Recreation for courses in Physical Education is PHED.

†6103-20.Workshops in Physical Education. (1-6).

Special study of selected phases of physical education through group study. Designed for indepth study in areas of interest and need for physical education teachers and administrators.

†6103.Workshop in Program Planning. (1-3).**6204. Test and Measurements in Health and Physical Education. (3).**

A study of the various tests in the field of health and physical education, including uses and interpretation of elementary statistical techniques.

7103. Foundations of Physical Education. (3).

The interpretation of the objectives of physical education as related to scientific facts contained within the biological, psychological, and sociological fields of study.

7113. Curriculum Construction in Physical Education. (3).

Consideration is given to the entire program of instruction in physical education in the public schools; methods of instruction, standards of achievement, evaluation of results, and the preparation of a course of study.

7123. Mechanical Analysis of Motor Skills. (3).

The student is provided with experiences which will enhance the understanding and practical application of the laws of mechanical physics to the fundamental techniques utilized in the performance of physical activities. Learning activities will include use of various texts, class discussion, problem solving, and cinematography.

7133. Current Readings in Physical Education. (3).

Directed independent readings in the area of physical education. Materials selected to strengthen areas of study. **PREREQUISITE:** Consent of instructor.

7134. Supervision of Health and Physical Education. (3).

The purpose of this course is to present and discuss the duties and problems of the supervisor of health and physical education in the school and community.

7143. Seminar in Physical Education. (1 - 3).

(May be repeated for maximum of 9 credits). Special study of selected current problems in this area. For the most part, individual studies will be pursued with group analysis and discussion at regular class meetings. **PREREQUISITE:** Consent of instructor.

7144. Development and Supervision of an Elementary School Health and Physical Education Program. (3).

Consideration is given to the entire program of instruction in health education and physical education in the elementary schools; methods of instruction, standards of achievement, organization and supervision of the program. (Intended for elementary school teachers as well as principals and supervisors).

7153. Special Problems in Physical Education. (1-3).

This course is designed to afford opportunity for prospective or in-service school and professional personnel to work individually or in groups in carrying out a research project.

7163. Motor Learning. (3).

An investigation of research as it relates specifically to the acquisition of motor skills. Emphasis is placed upon such variables affecting skill acquisition as: motivation; distribution, length and methods of practice; feedback mechanisms; and the retention and transfer of skills.

7204. Introduction to Research in Health and Physical Education. (3).

A study is made of the various methods and techniques of research. A potential problem is selected, analyzed and written according to research standards.

7404. Measurement and Evaluation in Health and Physical Education. (3).

This course includes selection, application and evaluation of certain tests appropriate to these areas.

7603. The Administration of Athletics. (3).

For athletic directors, supervisors, athletic coaches and principals. A study of representative athletic administrative procedures for colleges, public school systems, and municipal athletic leagues: fiscal procedures and business management are stressed.

†7996. Thesis. (3).

Application for writing a thesis must be filled out on an approved form after consultation with the major professor and filed with the Dean of The Graduate School.

RECREATION (RECR)

The prefix used by the department of Health, Physical Education, and Recreation for courses in Recreation is RECR.

6205. Supervised Clinical Training in Recreation Therapy. (6).

Instruction will be given in arts and crafts, radio, television programming, social activities, adapted sports, music, allied ward and clinic activities for patients with varied illnesses and disabilities.

6405. Organization and Administration of Recreation. (3).

An understanding of community organization, its philosophy, foundation and principles. An understanding of selected administrative practices that relate to successful recreational organization and administration.

†6705. Workshops in Recreation and Parks. (1-6).

Materials and experiences planned especially for in-service and continuing education for professional recreation and park personnel or in-depth specialization for majors in recreation. **PREREQUISITE:** Consent of instructor.

7135. Current Readings in Recreation. (3).

Directed independent readings in the area of recreation. Materials selected to strengthen areas of study. **PREREQUISITE:** Consent of instructor.

7145. Seminar in Recreation. (1-3).

(May be repeated for maximum of 9 credits). Special study of selected current problems in this area. For the most part, individual studies will be pursued with group analysis and discussion at regular class meetings. **PREREQUISITE:** Consent of instructor.

7155. Special Problems in Recreation. (1-3).

This course is designed to afford opportunity for prospective or in-service professional personnel to conduct independent or group research in the field of recreation and parks. **PREREQUISITE:** Consent of instructor.

7305. Philosophy of Leisure and Recreation. (3).

A study of the philosophical foundations for recreation in a dynamic society and in an age of leisure.

7405. Program Planning in Recreation. (3).

A study of the needs, interests, and problems of people with specific reference to age. A study of social forces affecting recreational planning and programming. Development of an understanding of the principles of program planning, development, and management, including organization, direction, and supervision.

7415. Recreation in Special Settings. (2).

Course content will focus on varied current problem settings (i.e., urban, inner city, rural and industrial recreation). **PREREQUISITE:** RECR 7305 or Consent of Instructor.

7505. Park Administration and Supervision. (3).

Administration, management, and operational principles, techniques and procedures related to park areas, facilities and personnel.

†7605. Supervised Practicum in Recreation. (3-9).

Field experiences of an internship nature providing an opportunity for practical application

of classroom theory. A range between 140 and 420 clock hours in professional field work in selected recreational settings according to student's particular area of emphasis. No more than six semester hours may apply to a 30 or 33 semester hours degree program. If nine hours is earned, the student must present not less than 36 hours for a non-thesis degree.

†7996. Thesis. (3-6).

Application for writing a thesis must be filled out on an approved form after consultation with the major professor and filed with the Dean of The Graduate School.

†Grades of S, U, or IP will be given.

HISTORY

PROFESSOR AARON M. BOOM, *Chairman*

Room 100, Mitchell Hall

The Department of History offers a program of study leading to the M.A. degree. The basic provisions of the program are as follows:

Prerequisites: A minimum of 18 semester hours in undergraduate history, except in special cases approved by the Dean of The Graduate School and the Chairman of the Department of History.

Requirements: (1) A total of 33 semester hours for the student who elects not to write a thesis; (2) A total of 30 semester hours for the student who elects to write a thesis; (3) No more than 21 semester hours may be taken in one field (United States, Europe, Latin America), including the 6 hours of thesis credit; (4) A minimum of 18 hours of 7000 level courses, of which 15 hours must be in history; (5) A maximum of 6 hours may be taken in a field outside history; (6) History 7000 and 7070 must be completed by each student; (7) A comprehensive examination over course work, with a follow-up examination at the option of the examining committee; (8) Thesis approval by a departmental committee headed by the faculty member who directed the preparation of the thesis.

Advising: When the student enters the program he will consult with a departmental adviser about the particular course of study best suited to his background and needs.

The Department of History also offers a program of study leading to a Ph.D. degree. The program is designed to assure a broad knowledge in two fields of history, more specialized and in-depth knowledge in another field, and professional competence in original research and writing. A minimum of three academic years beyond the B.A. degree is needed to complete the program. The basic provisions are as follows:

Admission: Formal permission for the student to enter the program will be granted by the Graduate Studies Committee. The student is encouraged to apply by the time he has completed 12 hours of course work beyond the M.A. degree or its equivalent. The student

must (1) Possess a grade point of 2.8 (on a 4.00 scale) for the last 60 hours of undergraduate work and a 3.00 on all history courses and previous graduate work; (2) Make satisfactory scores on the General Aptitude and History parts of the Graduate Record Examination; (3) Make a satisfactory performance on a Qualifying Examination, given over his past work in history.

General Requirements:

- (1) **Language.** As a general rule the student must demonstrate, by means of a standardized test, reading proficiency in two foreign languages. In some cases exception to one of the languages may be made.
- (2) **Fields of Study.** The student will choose one major field (Europe since 1789 or United States) and two minor fields (Ancient, Medieval-Renaissance, Early Modern Europe, Europe since 1789, United States, British, Latin America).
- (3) **Course Requirements.** The student must enroll for approximately 30 hours of course work beyond the B.A. degree in his major field and for approximately 15 hours in each of his minor fields. Among these hours must be History 7000, History 7011, and 12 hours of research seminars.
- (4) **Comprehensive Examination.** The student will take a two-day written examination over the course work in his major field and one-day examination over the course work in each of his minor fields. The student may take over one time any part of the examination failed. At its option the examining committee may schedule a follow-up oral examination.
- (5) **Dissertation.** Defense of the dissertation, prepared under the direction of a faculty member in the student's major field, will be by oral examination, and formal approval of it will be made by a majority vote of the examining committee.

Advising: When the student first enrolls for course work in the History Department, he will consult with a departmental adviser. After he has been formally admitted into the Ph.D. program, a Permanent Advisory Committee will be established to supervise the remainder of his work.

6126. Victorian England, 1840-1900. (3).

Reading and discussion on selected topics such as the development of English liberal thought, Victorian society and values, and imperialism.

6145. History of Modern Germany. (3).

A study of Germany from the origins of the unification movement in the Napoleonic Era through the Second World War.

6160. History of Russia to 1801. (3).

A study of the political, economic, social and cultural development of Russia from early times to the beginning of the nineteenth century.

6161. History of Russia from 1801 to 1917. (3).

A study of the political, economic, cultural, and intellectual development of the Russian Empire from the reign of Alexander I to the Bolshevik Revolution of 1917.

6162. History of the Soviet Union. (3).

A detailed study of the 1917 Revolution and the major developments in government, economy, cultural and social life, and international affairs which followed.

6240. History of Mexico. (3).

A history of the political, economic, social, and cultural development of Mexico from ancient times to the present.

6250. History of Brazil. (3).

A survey of the political, economic, social, and cultural development of Brazil from early times to the present.

6321. History of Ancient Civilization I. (3).

A study of the Ancient Near East and Greece through the time of Alexander the Great.

6322. History of Ancient Civilization II. (3).

A study of the Hellenistic World and of the rise and fall of the Roman Empire.

6361. History of the Byzantine Empire. (3).

A history of the Byzantine or East Roman Empire from 330 to 1453 and its influence on the Slavic, Turkic, and Islamic peoples.

6371. Early Middle Ages. (3).

A study of the Late Roman Empire, the migration period, the emergence of Islamic, Byzantine, and West European cultures through the period of the Investiture Controversy. NOTE: Students who have received credit for History 6370 will not be allowed credit for History 6371.

6372. High Middle Ages. (3).

A study of the urban emergence, the growth of feudal monarchy, the foundations of modern political institutions, the medieval universities, and the intellectual fabric of scholasticism. NOTE: Students who have received credit for History 6370 will not be allowed credit for History 6372.

6380. The Renaissance World. (3).

A study of the achievements and forces, political and economic, social and cultural, creative and intellectual, which made up the foundation of modern European civilization.

6390. Europe in the Age of the Reformation. (3).

A consideration of the religious struggles, the social and intellectual milieu in the sixteenth and early seventeenth centuries.

6401. Europe in the Age of the Baroque. (3).

A study of the political crises, the development of monarchical absolutism, the rise of modern science, and the cultural synthesis in the seventeenth century.

6402. The Age of Enlightenment. (3).

A study of intellectual, cultural, social, and political developments in eighteenth-century Europe.

6440. The Era of the French Revolution. (3).

A study of the Enlightenment, the French Revolution, and the Napoleonic era.

6451. Europe, 1815-1870. (3).

A study of Europe during the period 1815-1870.

6452. Europe, 1870-1914. (3).

A study of Europe during the period 1870-1914.

6461. Europe, 1914-1939. (3).

A study of Europe during the period 1914-1939.

6562. Europe, 1939-present. (3).

A study of Europe since 1939.

6501. Intellectual History of Europe I. (3).

Topics in the history of European thought and culture from the thirteenth through the seventeenth century.

6502. Intellectual History of Europe II. (3).

Topics in the history of European thought and culture from the eighteenth century to the present.

6620. Colonial America, 1607-1763. (3).

A study primarily of the political development and institutions of the English Colonies in America before 1763, with some attention given to Spanish, French, and Dutch colonization.

- 6630. Era of the American Revolution, 1763-1790. (3).**
A study of the origins and conduct of the American Revolution, the United States under the Articles of Confederation, and the writing and ratification of the Constitution.
- 6641. The Early American Republic, 1790-1825. (3).**
A study of American history from unification until 1825.
- 6642. The Jacksonian Period, 1825-1850. (3).**
A study of American history from 1825 to 1850.
- 6660. Civil War, 1850-1865. (3).**
A study of division and conflict.
- 6670. Reconstruction, 1865-1877. (3).**
A study of national and sectional issues following the Civil War.
- 6680. Emergence of Modern America, 1877-1914. (3).**
A study of the United States from the end of Reconstruction to the outbreak of World War I.
- 6701. The United States, 1914 to the Second World War. (3).**
A study of the United States from the outbreak of World War I. NOTE: Students who have received credit for History 6700 will not be allowed credit for History 6701.
- 6702. The United States, from the Second World War. (3).**
A study of the United States from World War II to the present. NOTE: Students who have received credit for History 6700 will not be allowed credit for History 6702.
- 6881. American Negro History. (3).**
A study of the role of the Negro in America from Jamestown to the present.
- 6941. History of the American Indian. (3).**
A study of the role of the Indian in American History.
- 7000- Introduction to Historical Research and 8000. Writing. (3).**
A study of the mechanical techniques of historical composition, the nature and use of various kinds of historical source materials, bibliographical aids, and methods of historical synthesis. Required of all history majors.
- 7011- History and Philosophy of History. (3).**
8011. A survey of the history of historical writing, the speculative philosophies of history, and the problems involved in the critical philosophy of history.
- 7012- Directed Readings. (3-12).**
8012. Arranged on an individual basis. Master's candidates may take the course for 3 hours credit. May be repeated for a total of 12 hours credit by students admitted to doctoral program.
- 7070- Research Seminars. (1-3).**
- 8070.** Emphasis on original research and writing in topics drawn from the fields generally covered by the Studies courses. May be repeated for credit with departmental approval. PREREQUISITE: History 7000.
- 7121- Studies in Tudor England. (3).**
- 8121.** Readings and reports to survey the important literature on the period.
- 7122- Studies in Stuart England. (3).**
- 8122.** Readings and reports to survey the important literature on the period.
- 7123- Studies in English History, 1714-1867. (3).**
- 8123.** Readings and reports to survey the important literature on the period.
- 7124- Studies in England Since 1867. (3).**
- 8124.** Readings and reports to survey the important literature on the period.
- 7211- Studies in Colonial Spanish America. (3).**
- 8211.** Readings and reports to survey the important literature on the period.
- 7212- Studies in the National Period of Latin America. (3).**
- 8212.** Readings and reports to survey the important literature on the period.
- 7320- Studies in Ancient History. (3).**
- 8320.** Readings and reports to survey the important literature on the period.
- 7376- Studies in the Middle Ages. (3).**
- 8376.** Readings and reports to survey the important literature on the period.
- 7380- Studies in the Renaissance. (3).**
- 8380.** Readings and reports to survey the important literature on the period.
- 7390- Studies in Sixteenth Century Europe. (3).**
- 8390.** Readings and reports to survey the important literature on the period.
- 7401- Studies in Seventeenth Century Europe. (3).**
- 8401.** Readings and reports to survey the important literature on the period.
- 7401- Studies in Eighteenth Century Europe. (3).**
- 8402.** Readings and reports to survey the important literature on the period.
- 7405- Studies in Nineteenth Century Europe. (3).**
- 8405.** Readings and reports to survey the important literature on the period.
- 7406- Studies in Twentieth Century Europe. (3).**
- 8406.** Readings and reports to survey the important literature on the period.
- 7521- Studies in European Diplomacy, 1848-1919. 8521. (3).**
Readings and reports to survey the important literature on the period.

7522- Studies in European Diplomacy, 1919-1939. 8522. (3).

Readings and reports to survey the important literature on the period.

7630- Studies in Early American History (to 1800). 8630. (3).

Readings and reports to survey the important literature on the period.

7640- Studies in United States History, 1800-1865. 8640. (3).

Readings and reports to survey the important literature on the period.

7680- Studies in United States History, 1865-1917. 8680. (3).

Readings and reports to survey the important literature on the period.

7700- Studies in United States History, 1917-8700. 1950. (3).

Readings and reports to survey the important literature on the period.

7871- Studies in United States Urban History. (3).**8871. Readings and reports to survey the important literature on the period.****7875- Studies in United States Diplomatic History. 8875. (3).**

Readings and reports to survey the important literature on the period.

7920- Studies in Southern History. (3).**8920. Readings and reports to survey the important literature on the period.****7940- Studies in the American West. (3).****8940. Readings and reports to survey the important literature on the period.****7960- Studies in State and Local History. (3).****8960. Readings and reports to survey the important literature on the period.****†7996. Thesis. (3-6).**

The student must write and defend satisfactorily a thesis on a subject approved by his major professor.

†9000. Doctoral Dissertation. (3-12).

No more than 12 hours may be applied toward degree. **PREREQUISITE:** Admission to candidacy.

†Grades of S, U, or IP will be given.

HOME ECONOMICS

PROFESSOR MARQUITA L. IRLAND, *Chairman*

Room 404, Manning Hall

The Home Economics department offers course work primarily designed to meet the teaching endorsement requirement for the degree of Master of Education in Secondary Education. Students pursuing a degree in this area must hold secondary school certification in Home Economics.

The prefix used by the department is HMEC.

HOME ECONOMICS (HMEC)

7103. Consumer Education in Secondary School Home Economics Curriculum. (3).

Philosophy, design and techniques for incorporating consumer education in the secondary and occupational emphasis programs. Special consideration will be given to education for the culturally deprived, handicapped, ageing, and working with individual families.

7201. Marriage and Family Relations. (3).

A consideration of interpersonal relations in the family. Designed for advanced study of the growing body of scientific knowledge concerning marriage, the experiences which precede it and the adjustments and challenges growing out of it. Special attention will be given to husband-wife, parent-child and sibling relationships and to stages in the family life cycle.

7301. Seminar in Child Development. (3).

Review, interpretation and evaluation of current literature and research in defined areas of child development. Implications of research findings for teaching, counseling, and/or research in child development.

†7311-19. Internship in Occupational Home Economics. (3).

Materials, methods, and coordinating of work experiences for occupational Home Economics including supervised-on-the-job experience in a selected occupational area for the teacher. **PREREQUISITES:** Vocational Certification and teaching experience.

†7311. Child Care Services. (3).**†7312. Food Service. (3).****†7315. Clothing Services. (3).****7381. Family Finance Education in Schools. (3).**

An overview course designed to provide teachers with knowledge about family financial problems and experiences and ways in which this knowledge can be used to relate to subject areas in the classroom.

7383. Workshop in the Improvement of Instruction. (3).

Designed to provide current information, based on research and scholarly investigation, in specific areas of study encompassed in the secondary Home Economics curriculum. Effective teaching and evaluating techniques will be discussed and demonstrated.

7393. Seminar in Occupational Home Economics. (1-3).

Consideration of the philosophy, curriculum, operation, and evaluation of Occupational Home Economics programs. Seminar scope and direction will be based on the 1963 and 1968 Federal Vocational Education Legislative Acts.

7405. Clothing Behavior Patterns. (3).

This course is concerned with the application of

basic concepts from cultural anthropology, sociology, and psychology to the study of clothing through surveys of pertinent research literature, selected references and periodicals.

7701. Workshop in Family Finance Education. (1-3).

This course is designed to assist teachers in using materials, information and techniques for improving instruction related to financial problems of life. Practical application of money management in terms of planning, buying, borrowing, saving, investing, protecting and sharing.

7704. Seminar in Housing and Home Furnishings. (3).

Research oriented analysis of history, current trends, developments and problems concerned with socio-economic aspects of housing and home furnishings.

LIBRARY SERVICE

ASSOCIATE PROFESSOR EVELYN GEER CLEMENT,
Chairman

Room 201, Brister Library

The prefix used by the department is LIBS. General requirements of the Graduate School apply. In addition, a reading knowledge of at least one foreign language is highly desirable.

Students majoring in Library Service for the Master of Education Degree must complete one of the following programs of study.

A. Prerequisite undergraduate courses — 9 semester hours

LIBS 4131, LIBS 4232, and either LIBS 4231 or LIBS 4401. Students who hold state school library certification are assumed to have met this requirement.

Required graduate courses — 33 semester hours

9 semester hours Education, including EDRS 7521 and EDUC 7303.

15 semester hours Library Service courses, as approved by the student's advisor.

9 semester hours outside the College of Education, to be taken as a meaningful, related sequence within a single department or closely related departments, subject to approval by the student's advisor.

B. Students holding elementary or secondary school certification may elect to complete the requirements for state school library certification concurrently with the requirements for the M.Ed. Undergraduate prerequisites apply as in (A) above.**Required graduate courses — 36 semester hours**

6 semester hours Education, EDRS 7521, EDUC 7303

21 semester hours Library Service courses, including LIBS 6111, LIBS 6121, and LIBS 6331.

9 semester hours outside the College of Education as in (A) above.

Each candidate for the M.Ed. with the major in Library Service must complete a minimum of 33-36 graduate semester hours and pass a written and/or oral comprehensive examination.

LIBRARY SERVICE (LIBS)

6111. Books and Related Library Materials for Children. (3).

Primarily a reading course based on materials suitable for elementary school children; leisure-time interests and curricular needs; criteria for evaluating books and related materials such as magazines, photograph records, radio programs, and films; aids used in their selection; types of literary and informational books, authors, illustrators, and publishers; story-telling and other devices for encouraging reading.

6121. Books and Related Library Materials for Young People and Adults. (3).

This course is presented in the same manner as Library Service 6111, but is adapted to materials on the junior and senior high school levels; attention is also given to adult books to enable librarians to work more effectively with faculty and community groups.

6131. Introduction to Bibliography. (3).

An introduction to the theory and purpose of bibliography as a form of access to information, with emphasis on general reference sources. Introduces principles, practices, and methods of reference service. Sets the foundation for advanced bibliography courses by developing recognition of types and characteristics as well as representative reference tools.

6232. Cataloging and Classification. (3).

Introduction to the principles and techniques of the cataloging and classification of books and other library materials.

6331. School Library Administration. (3).

The library is treated as a service agency in this course. Emphasis is given to the place of the library in the instructional and guidance program of the school and to the philosophy and purposes of libraries and librarianship. Included are such problems as standards and evaluation, public relations and publicity, support, housing and equipment, training of assistants and library study equipment, training of assistants and library study hall relationships. Field trips are made to different types of libraries.

6401. Foundations of Librarianship. (3).

An introduction to librarianship as a profession and the library as an institution in the cultural and political setting. Examine the influence of social issues, societal needs, professional organizations, and federal legislation on the goals, ethics, organization, programs, and problems of libraries and librarians.

7010. History of Books and Libraries. (3).

An introduction to the history and development of libraries from the earliest times to the present, including the changing role of libraries as disseminators of recorded knowledge. Examines the nature of library collections from papyrus rolls and clay tablets through the invention of printing to the collections of new media in the twentieth century.

7011. Library Management and Organization. (3).

Emphasis on understanding the basic functions of management and their application to library administration, including principles, theories, philosophies, practices and research findings. Stresses the universality of management functions in all phases of library operations in all types and sizes of libraries.

7201. Nonprint Media in the Library. (3).

Emphasis on the principles and techniques of the cataloging and classification of nonprint media in libraries, stressing the application of theory, philosophy, practice, and research findings in this field.

7301. Government Documents. (3).

Emphasis on the nature and scope of American government publications, the problems of organization and use, and methods of production and distribution.

7501. Bibliography of the Humanities and Social Sciences. (3).

An introduction to the nature, scope, and distinguishing characteristics of the several disciplines comprising the humanities and social sciences. Includes examination of classic and contemporary literature, methodology, and information sources in these fields.

7502. Bibliography of Science and Technology. (3).

An introduction to the nature, scope, and distinguishing characteristics of the several disciplines comprising science and technology. Includes examination of classic and contemporary literature, methodology, and information sources in these fields.

7601. Introduction to Information Science. (3).

Introduction to methodology and techniques for storing and retrieving information. Review various types of equipment for handling information and providing services in libraries, including an introduction to systems planning and automation concepts for traditional and nonconventional libraries. Emphasize practical applications.

7701. Selection of Library Materials. (3).

Introduction to the philosophy and practice of building the library collection. Emphasis on the use of bibliographic aids and on the principles of selection and evaluation of library materials for adults and young people in all types of libraries.

7991. Special Problems in Librarianship. (2).

Independent investigation and report of a research problem or directed readings in a selected area of librarianship under the direction of a faculty member. May be repeated with a change in content for a total of four hours. PREREQUISITE: 6 graduate hours in LIBS.

7992. Workshop in Librarianship. (1-3).

Designed for in-service training and continuing education of professional librarians in all types of libraries. Content will change as indicated by trends and problems in the field and the expressed needs of working librarians. PREREQUISITE: Library experience and consent of instructor.

PROFESSOR BRUCE McSPARRIN, *Chairman**Room 202, The College of Business Administration Building*

in the Department of Management, qualified students may work toward the M.S. with a major in Management or the M.B.A. degree with an area of concentration in Management.

Requirements for the M.B.A. degree are on page 29.

Prerequisites for M.S. in Management:

In addition to Core I prerequisites, students should have completed or complete all necessary prerequisites for the advanced course work.

Each candidate for the M.S. degree in Management must complete a minimum of 33 semester hours and pass a written and/or oral examination.

The 33 semester hours comprising the M.S. degree include 21 semester hours (24 hours if a thesis is written) of approved work in the major and 9-12 hours in collateral courses approved by the student's adviser. At least 24 of the 33 semester hours required must be in courses designated primarily for graduate students (7000 level or above).

210. Personnel Administration. (3).

Employer-employee relationships; job analysis; recruitment, selection, training, transfer, promotion, and dismissal of employees; industrial unrest; wage plans and policies; employee health, interest and morale; dealing with unions. PREREQUISITE: Management 3110.

220. Collective Bargaining. (3).

Labor-management relations from the standpoint of collective bargaining contracts. Emphasis is given to the process of negotiating agreements, including procedures, tactics and subject matter. PREREQUISITE: Management 3110.

230. Labor Legislation. (3).

Historic and philosophic background for labor legislation with emphasis on recent legislation in the labor area and the effect of these laws on social and economic institutions. PREREQUISITE: Management 3110.

240. Wage and Salary Administration. (3).

Systematic examination of the administration of wage and salary as a tool of management. Through the use of the job descriptions, job analysis, and job evaluation methods instruction is given in the techniques of rationalizing wage structures. Analyses of some of the outstanding considerations which must be taken into account in installing and administering wage programs are made. PREREQUISITE: MGMT 3110.

420. Human Relations in Organizations. (3).

A study of human relations as applied to people at work in all kinds of organizations. Emphasis is placed on the understanding of human behavior and the motivation of employees to work together in greater harmony. Topics to be covered include fundamentals of organizational

behavior, leadership and its development, organizational environment, and communication and group processes. PREREQUISITE: MGMT 3110.

6510. Production Management. (3).

A course devoted to the development of scientific management, organization of the production function, operation and control of production systems, application of the analytical methods of cost analysis; simulation and statistical analysis. Applications of schematic analysis to production will also be covered. PREREQUISITES: Management 3711 and Management 3110.

6711. Intermediate Statistical Analysis. (3).

An in depth study of business decision making using advanced statistical concepts including additional probability distributions, use of samples and sample design, non-parametric methods, and advanced techniques of analysis through use of correlation analysis and analysis of variance. Computerized statistical programs will be utilized to solve complex problems. PREREQUISITES: MGMT 2750 and MGMT 3711.

6750. Computer Programming Principles and Applications. (3).

A course emphasizing the programming of electronic digital computers. Current programming languages will be taught such as FORTRAN AND COBAL. The students will be encouraged to program and run several business oriented problems in both languages. PREREQUISITE: Management 2750 and one college level mathematics course, or permission of the instructor.

6760. Operations Research. (3).

An introductory study of decision-making which concentrates on the model building process within the decision theory framework. The electronic computer will be used where appropriate to solve problems of linear programming, waiting line theory, simulation, game theory and other statistical problems of a business and economic nature. PREREQUISITE: Management 3711, and Management 4750, or consent of the instructor.

6780. Systems Design for Business Activities. (3).

Emphasis will be given to computer systems design for typical business applications involving the automation of business activities. This course will concern estimates of computer requirements; organizational arrangement; planning the total system; flow-charting; conversion problems; cost and performance evaluation. The objective is to simulate the middle level executive role in the transition and integration of business operations into computer oriented systems. PREREQUISITE: Management 2750, Management 3711.

6790. Management Information Systems. (3).

A comprehensive view of the decision-maker's information requirements and the role of current information gathering means and methods. Problems and techniques concerning the design and installation of responsive systems will be examined with special attention to the executive use of the system's products. A systems approach utilizing current planning and control models will be studied through current literature and texts in the computer field. PREREQUISITE: MGMT 4750.

6810. International Management. (3).

Constructed to provide fundamental knowledge of contemporary managerial problems as presented in a foreign-influenced environment. Uniqueness of problems in planning, control, choosing foreign associates, plant location, labor bureaucracy, legal constraints, and trade with foreign governments will be highlighted by text and through discussion of articles from current business periodicals. PREREQUISITES: Management 3110 or 7000 and Marketing 3010 or 7001.

7000. Survey of Organization and Management. (3).

Examination of the theories of management and organization. Control and its effect on motivation and interpersonal relationships in the various types of organizations will be covered. Managerial techniques and functions will be developed and integrated both from the standpoint of administrative and production management through case studies, current literature, and assigned text materials. PREREQUISITE: Consent of instructor. (Credit will not be given for both this course and Management 3110 or equivalent.)

7011. Survey of Statistical Methods in Business and Economics. (3).

A survey course examining the various statistical techniques that are appropriate in analyzing business and economic problems in a management framework. The course is designed for those graduate students who have had little or no previous work in statistics. PREREQUISITE: MATH 1203 or higher and consent of the instructor. (Credit will not be given for both this course and Management 3710/3711 or equivalent.)

7050. Survey of Data Processing in Business. (3).

An introductory course designed to acquaint the graduate student with the basic principles of business data processing. The course is primarily for those graduate students who have had no previous work in business data processing. PREREQUISITES: Math 1203 or higher, and consent of the instructor. (Credit will not be given for both this course and Management 2750 or equivalent.)

7210. Seminar in Industrial Relations. (3).

A study of selected problems in labor-management relations. PREREQUISITE: Consent of instructor.

7291. Manpower I. (3).

Traces the development of manpower theory from its beginning in Western culture through present policies and legislation in the U.S. Emphasis will be given to the industrial revolution, great depression, recent urban migration, changing technology, and recent manpower legislation. PREREQUISITE: Consent of the instructor.

7292. Manpower II. (3).

The economics and sociology of labor force participation within the theoretical framework of economics and sociology. An examination of the literature will be made with regard to social, educational, and demographic variables as they relate to participation. The labor force will also be examined within the context of price and employment theory. PREREQUISITES: MGMT 7291 or consent of the instructor.

7293. Manpower III. (3).

A survey of published human resource data and survey methods with emphasis upon theoretical concepts involved in measurement and analysis. An examination of the major concepts of labor productivity and their application will receive special treatment. Preparation of the student for writing a thesis is implicit. PREREQUISITE: MGMT 7291 or consent of the instructor.

7410. Seminar in Business Policy. (3).

The development of the top management viewpoint, the basic objective being to develop executive abilities and creative thinking. Selected problem areas of modern business will be explored. Alternative courses of action will be appraised, and decision-making abilities will be developed. PREREQUISITE: 12 semester hours of graduate business administration courses.

7420. Quantitative Methods for Business Decisions. (3).

Special study of selected current quantitative problems in this area. For the most part, individual studies will be pursued with group analysis and discussion at regular class meetings. PREREQUISITE: Consent of instructor.

7421. Seminar in Organizational Behavior. (3).

Special study of selected current qualitative problems in this area. For the most part, individual studies will be pursued with group analysis and discussion at regular class meetings. PREREQUISITE: Consent of instructor.

7422. Seminar in Organizational Theory. (3).

An examination of the principles and techniques of organization covering managerial functions and processes, types of organization structure, and the development of managerial concepts in terms of executive action. Both the classical and behavioral approaches to organization will be analyzed. PREREQUISITE: Consent of instructor.

430. Advanced Quantitative Methods for Business Decisions. (3).

An advanced study of management decision-making using various quantitative methods of analysis. Some of the topics covered include analysis, gaming theory, Markov chains, and Bayesian decision theory. Heavy reliance will be placed on the electronic computer where appropriate to solve problems of a business and economic nature with emphasis on the collection and analysis of the data, fitting an appropriate model to the problems, and interpretation of the results as obtained from the computer execution. **PREREQUISITES:** MGMT 4750 and 7420.

440. Statistical Planning Techniques for Management Decision Making. (3).

A coverage of the techniques available to management for collecting and analyzing data for decision making. The student is introduced to the various sampling techniques available for collecting and analyzing data. Included are techniques such as linear and non-linear time-series analysis with particular emphasis on how seasonal patterns affect the individual firm. Two variable conditions (linear and non-linear) will be covered as well as multiple and partial correlation analysis. Several of the computerized statistical planning packages available will be studied in detail in order to provide the user with an understanding of the formulation of business problems for solution on the computer. Emphasis is placed on interpretation and implementation of the results of these statistical computer packages for managerial decision making. **PREREQUISITES:** MGMT 4711, MGMT 4750, and MATH 1312 or MATH 2321.

7450. Simulation and Analysis of Business Systems. (3).

This course will study the methods and techniques of digital computer simulation of business systems utilizing knowledge of data processing, statistics, probability and operations research. Areas of applications will include inventory systems, production, scheduling, and various other traffic systems that experience waiting-line problems. Topics to be covered include the methodology of construction computer simulation model, model validation and analysis of results, and a brief look at various simulation languages, such as GPSS and SIMSCRIPT. **PREREQUISITES:** MGMT 4711, MGMT 4750, and MATH 1312 or MATH 2321.

7910. Problems in Management. (1-3).

Directed independent research projects in an area selected by the student with approval of the staff member supervising. **PREREQUISITE:** Consent of department chairman.

7920. Readings in Management. (3)

A study of selected readings in the field of management. **PREREQUISITE:** Consent of Department Chairman. (Student cannot obtain credit in this course and also in Management 7910 without consent of instructor.)

†7996. Thesis. (3-6).

Application for writing a thesis must be filled out on an approved form after consultation with the major professor and filed with the Dean of The Graduate School.

†Grades of S, U, or IP will be given.

MARKETING

PROFESSOR CLIFFORD J. ELLIOTT, *Chairman*

Room 302, The College of Business Administration Building

the Department of Marketing, students may work toward the M.S. with a major in Marketing or the M.B.A. degree with an area of concentration in Marketing.

Requirements for the M.B.A. degree are on page 29.

Master of Science in Marketing: The program is open to students who have an undergraduate degree in Business Administration. The purpose of this program is to provide a depth of competence in the field of marketing. This, in turn, will prepare students for business as well as academic careers.

Prerequisites for M.S. in Marketing: In addition to Core I prerequisites, students should have completed or complete all necessary prerequisites for the advanced course work.

D. Each candidate for a M.S. degree in Marketing must complete a minimum of 33 semester hours of approved course work and pass a written and/or oral examination. The 33 semester hours comprising the M.S. in Marketing include a minimum of 21 hours in the major (24 if a thesis is written). Four of the following courses must be included in the major area. Marketing 7010, Current Aspects of Marketing; Marketing 7011, Marketing Strategies and Tactics; Marketing 7012, Marketing Structure and Administration; and Marketing 7013, Marketing Controls; Marketing 7014, Marketing Systems Design, Micro-Marketing Systems; and Marketing 7015, Research Methodology. The remaining 9 to 12 hours are in collateral courses approved by the student's adviser. At least 24 of the 33 semester hours required must be in courses designed primarily for graduate students (7000 level or above).

7001. Marketing Functions and Institutions. (3).

Designed for those graduate students with undergraduate degrees in fields other than business administration. A survey of marketing functions and institutions with emphasis placed upon the relationships among the various functions and institutions and with external entities such as governments, social, religious, and political organizations. Both semesters. PREREQUISITE: ECON 2110 or ECON 7010.

7010. Current Aspects of Marketing. (3).

A comprehensive review of current marketing literature. Emphasis is placed on marketing innovations from the standpoint of functions, institutions, and concepts.

7011. Marketing Strategies and Tactics. (3).

An analytical approach to planning as it relates to the marketing activities of a business enterprise. Focus is placed on: (1) Development of a qualitative-quantitative framework for decision-making; and (2) Fundamental strategies and tactics.

7012. Marketing Structure and Administration. (3).

An appraisal and diagnosis of organizational structures and executive action as they relate to marketing decisions regarding both external and internal factors.

7013. Marketing Controls. (3).

A study of the adjustment of marketing operations to predetermined standards or control values in an effort to minimize performance variations. Stress will be placed on communicating to management the vital information necessary for sound administrative and planning decisions.

7014. Marketing Systems Design. (3).

The marketing system is studied from the standpoint of its inputs, operation, control and outputs so that it can be revised as greater efficiency is required. Simulation, information systems and other techniques helpful in designing effective marketing systems are introduced.

7015. Research Methodology. (3).

The nature and scope of research philosophy and methods in business. Both primary and secondary research procedures will be studied. Emphasis will be focused on the preparation and presentation of independent research findings and on utilization of multi-variate analysis techniques.

7016. Introduction to Quantitative Marketing Methods. (3).

Introduction to analytical tools available for marketing administration, including use of the computer, to develop decision criteria under known and uncertain operation conditions. Emphasis is upon the application of basic quantitative techniques to marketing situations.

7020. History of Marketing Institutions and Thought. (3).

An introduction to the concepts and theories advanced in the development of institutions, channels, functions, and processes in the field of marketing.

7021. Pricing Theories and Policies. (3).

An examination of the role of prices in the economy and of price making under varying conditions of competition. Also included is an examination of the acquisitive and social implications of pricing policies.

7022. Behavioral Approaches to Marketing. (3).

An analysis of the contributions of the behavioral science disciplines to consumer motivation, buying behavior, market adjustment, and product innovation. These processes are evaluated with reference to psychological drives and other behavioral science concepts at each stage of distribution.

7023. Advanced Quantitative Marketing Methods. (3).

A critical examination of the various quantitative tools to gain an understanding of their capabilities and their limitations in marketing operations. PREREQUISITE: MKTG 7016.

7030. Marketing Seminar. (3).

Special study of current problems in marketing. For the most part, individual studies will be pursued with group analysis and discussion.

7910. Problems in Marketing. (3-6).

Directed independent research projects in an area selected by the student with the approval of the staff member supervising. PREREQUISITE: Consent of Department Chairman.

†7996. Thesis. (3-6).

Application for writing a thesis must be filled out on an approved form after consultation with the major professor and filed with the Dean of the Graduate School.

†Grades of S, U, or IP will be given.

PROFESSOR STANLEY P. FRANKLIN, *Chairman*

Room 373, Winfield Dunn Building

Courses of study are offered leading to the degree of Master of Science (including an interdisciplinary degree) and Doctor of Philosophy. Areas of concentration within the M.S. degree are offered in Computer Science, Mathematics, and Statistics. For the Master of Science degree a student may complete both a major and a collateral area, approved by his advisor, in any department in which he is qualified to do graduate work. The area of concentration for the Doctor of Philosophy degree is The College Teaching of Mathematics.

General requirements for the degree of Master of Science, including the interdisciplinary degree, are summarized on page 32 and for the degree of Doctor of Philosophy on page 38.

Departmental requirements for the Master's degree are as follows:

1. Satisfactory completion of thirty-three (33) semester hours of graduate credit.
2. A. For the M.S. degree in Computer Science satisfactory completion of at least twenty-one (21) semester hours of computer science courses including:
 - (i) at least two courses in computer software such as
 - Math 6711 Advanced Computer Programming
 - Math 6765 Information Structures
 - Math 6769 Programming Languages
 - Math 7761 Operating Systems
 - Math 7760 Compiler Design
 - Math 7777 Minicomputer Software
 - (ii) at least one theoretical course such as
 - Math 7711 Mathematical Foundations of Computer Science
 - Math 7712 Automata Theory
 - Math 7713 Discrete System Theory
 - Math 7713 Discrete System Theory
 - Math 7714 Continuous System Theory
 - (iii) at least one applications course such as
 - Math 6713 Numerical Computer Methods
 - Math 6715 Artificial Intelligence
 - Math 6721 Numerical Analysis I
 - Math 6722 Numerical Analysis II
 - Math 6741 Linear Programming Methods
 - Math 7721 Advanced Numerical Analysis
 - Math 7731 Systems Simulation
 - Math 7743 Methods for Optimization
 - Math 7791 Problems in Computer Science

Entering students will normally be expected to have had the equivalent of Math 4710 Computer Programming.

- B. For the M.S. degree in mathematics, satisfactory completion of at least twenty-one (21) semester hours of course work in mathematics (an approved list of courses is available from the department.) A knowledge of material contained in and generally at the level of the following courses is considered to be basic:

Math 6241 Linear Algebra
 Math 6261 Abstract Algebra
 Math 6351 Real Analysis
 Math 6361 Complex Variables
 Math 6411 Topology

- C. For the Interdisciplinary Master of Science degree in mathematics, satisfactory completion of at least twenty-one (21) semester hours of mathematics courses. With the approval of his advisor, the student may elect up to twelve (12) semester hours in a collateral area, i.e., Education, Engineering, Biology, Business, etc. For example, a candidate whose collateral area would be Secondary Education may choose his mathematics courses from those listed below under the heading "Mathematics Courses for Secondary School Teachers."
- D. For the M.S. degree in Statistics, satisfactory completion of at least twenty-one (21) semester hours of course work in Statistics. A year's work in calculus is needed for several of these courses. A student without the calculus may be admitted to the program on a provisional basis. The following courses or their equivalents are required:

Math 6611 Statistical Methods
 Math 6613 Introductory Statistical Theory
 Math 7641 Analysis of Variance
 Math 7643 Least Squares and Regression Analysis
 Math 7654 Inference Theory

3. A program of study approved by an advisor appointed by the Department Chairman, and subject to review and approval by the Candidate's Advisory Committee. The Committee is appointed after the filing of the application for Admission to Degree Candidacy.
4. Satisfactory completion of a Comprehensive Examination over all of the course work that the student has completed.

Descriptions of program requirements for the Doctor of Philosophy degree are available in the department.

A student who wishes to take a course without having had all of its prerequisites must obtain the permission of the course instructor and the departmental Director of Graduate Studies.

COMPUTER SCIENCES

6710 Computer Programming. (3).

A first course in the programming of digital computers, stressing algorithmic problem solving. BASIC and FORTRAN programming languages and their application to a variety of numerical and non-numerical problems. Use of remote batch terminals and interactive terminals. PREREQUISITE: Math 1203 or 1211 or equivalent.

6711. Advanced Computer Programming. (3).

The elements of computer organization, machine language, forms of data representation and instructions and their effects on algorithmic programs. Operating systems, job control language, and the use of system supplied auxiliaries. Assembler language and its application to a variety of numerical and non-numerical problems. PREREQUISITE: Math 6710 or its equivalent.

6713. Applied Computer Methods. (3).

Methods of numerical computation; interpolations; numerical differentiation and integration; solution of algebraic and transcendental equations; inversion of large matrices; determination of proper vectors and proper values; solution of differential and integral equations; estimation of error and error control. PREREQUISITE: Mathematics 6710 or equivalent.

6715. Artificial Intelligence. (3).

Self-organizing systems, information theory, rational decision-making; pattern recognition, parametric and non-parametric training methods for developing pattern classifiers; problem solving; heuristic programming and problem reduction search methods. PREREQUISITES: Math 2321 and 6710 or their equivalents.

6721. Numerical Analysis I. (3).

Derivation and application of computer-oriented, numerical methods for functional approximation, differentiation, quadrature, and the solution of ordinary differential equations. PREREQUISITES: Mathematics 2321, and Mathematics 6710, or its equivalent.

6722. Numerical Analysis II. (3).

A continuation of Mathematics 6721; numerical methods for solving applied problems from calculus and differential equations. PREREQUISITE: Mathematics 6721.

6741. Linear Programming Methods. (3).

Theory of linear programming methods; problem formulation; convex sets; simplex and revised simplex methods; matrix games and linear programming. PREREQUISITES: Mathematics 3241 and 6710 or its equivalent.

6765. Information Structures. (3).

Introduction to data structures including lists, stacks, queues, trees, and graphs. Scanning, searching, sorting and merging. Machine representation of data structures. Introduction to information storage and retrieval. PREREQUISITE: Math 6710.

6769. Programming Languages. (3).

Classification and structure of programming languages. Syntactic description of programming languages. Scope of declarations and the relationship to resource allocation. Recursive

procedures, non-numeric languages, structure programming and language extension. PREREQUISITE: Math 6710 or its equivalent.

6791. Topics in Computer Science. (3).

Directed individual study of selected areas of computer science. Repeatable by permission for a maximum of 6 hours. PREREQUISITE: Permission of instructor.

7111. Mathematical Foundations of Computer Science. (3).

Background in abstract algebra required for the study of switching, automata theory, and the theory of computation. Topics include set relations, functions, groups, semi-groups, lattices and Boolean logic. Software applications are made to various areas of information science. PREREQUISITE: Mathematics 6261 or permission of instructor.

7712. Automata Theory. (3).

Finite automata, Kleene's theorem; infinite machines and effective computation, recursive function theory. Post systems and context-free languages; decomposition of machine; stochastic automata. PREREQUISITE: Mathematics 7711.

7713. Discrete System Theory. (3).

Discrete-time dynamical systems; state variable description and classification; controllability and observability; linearity and time-invariance. Theory of autonomous systems. PREREQUISITES: MATH 3241 or equivalent and MATH 3391.

7714. Continuous System Theory. (3).

Canonical structures of dynamic systems; formulation of sensitivity equations; computer methods for analysis of large dynamic systems; rational decision making. PREREQUISITES: MATH 3241 or equivalent and MATH 3391.

7721. Advanced Numerical Analysis. (3).

A continuation of Mathematics 6722; specialized methods and techniques in the field of numerical analysis. PREREQUISITE: Mathematics 6722.

7731. Systems Simulation. (3).

Mathematical modeling for digital simulation variables, determinism, non-determinism, aggregation. Simulation design, languages, outputting, and debugging. Applications of computer simulation. PREREQUISITE: Math 6710.

7743. Computer Methods for Optimization. (3).

Optimization theory for static and dynamic systems of nonlinear equations, with and without constraints. Includes the development of computer algorithms for Newton-Raphson methods, gradient techniques, search methods, geometric programming, dynamic programming, and the maximum principle. PREREQUISITES: Math 2322 and 6710 or their equivalents.

60. Compiler Design. (3).

Translation of computer source language including compiling of interpreters, scanning and code generation, for arithmetic and Boolean expressions, arrays conditional and iterative statements using recursive and non-recursive compiling techniques. Construction of an automated compiler given a source language in the forms of a context-free grammar and a target in the form of actions to be performed when the rules of the grammar are satisfied. PREREQUISITE: Math 6711 or 6765.

61. Operating Systems. (3).

Function, structure, and design parameters of computer operating systems. Time-sharing, multiprogramming, and multiprocessing considerations. Actual operating systems. Design methodology and evaluation techniques. PREREQUISITE: MATH 6711.

77. Minicomputer Software. (3).

Software design and implementation for microprogrammable minicomputers. Parallel instruction execution, I/O programming, peripheral processors, multi-tasking and computer networks. Assemblers, laboratory projects, firmware implementation of instructions and machine operation. PREREQUISITES: Math 6711 or 6765 plus Math 7760 or 7761.

91- Problems in Computer Science. (1-4).

Directed independent problem research and program design, writing and documentation in an area selected by the student with approval of both the adviser and supervising staff members. Repeatable by permission PREREQUISITE: Permission of instructor.

93- Seminar in Computer Science. (1-3).

93. Advanced topics and recent developments in computer science. Repeatable by permission.

MATHEMATICS

611. Philosophy of Mathematics. (3).

Logical methods; axiomatic systems; interdependency and consistency; the nature of mathematics. PREREQUISITE: Mathematics 3111.

71. Special Problems in Mathematics. (1-3).

Directed individual study in a selected area of mathematics chosen in consultation with the instructor. Repeatable by permission of the Chairman of the Department. PREREQUISITE: Permission of the instructor.

221. Theory of Numbers. (3).

Divisibility properties of integers; prime numbers; congruences; Diophantine equations; quadratic residues; number theoretic functions. PREREQUISITE: Mathematics 1312 or 1321.

6241. Linear Algebra. (3).

Systems of linear equations; matrices and elementary row operations; vector spaces and sub-spaces; computations concerning sub-spaces; linear transformations; linear functionals; annihilators; polynomials; Lagrange interpolation; polynomial ideals; prime factorization of a polynomial. PREREQUISITE: Mathematics 2321 or permission of instructor.

6261. Abstract Algebra. (3).

Rings; integral domains; fields, groups; divisibility theory; real and complex numbers; polynomials. PREREQUISITE: Mathematics 2321.

6262. Abstract Algebra. (3).

Groups; vectors and vector spaces; matrices; linear groups; determinants and canonical forms; Boolean algebras and lattices; rings and ideals; Galois theory. PREREQUISITE: Mathematics 6261.

6351. Advanced Calculus. (3).

Functions of several variables; partial differentiation; multiple integrals; infinite series of constants; power series; uniform convergence and limits; improper integrals; Stieltjes integration. PREREQUISITE: Mathematics 3111.

6361. Complex Variables. (3).

Complex numbers, point sets and mappings; analytic functions; integration. PREREQUISITE: Mathematics 2322.

6391. Applied Mathematics. (3).

Laplace transforms; Fourier series; introduction to partial differential equations; PREREQUISITE: Mathematics 3391.

6392. Applied Mathematics. (3).

Partial differential equations. PREREQUISITE: Mathematics 6391.

6411. Topology. (3).

Introductory set theory; metric spaces; topological spaces; mappings; Hausdorff spaces; connectedness and compactness. PREREQUISITES: Mathematics 3111.

7211- Topics in Algebra. (3).

8211. Repeatable by permission. PREREQUISITE: Permission of the instructor.

7241. Linear Algebra. (3).

Vector spaces; linear transformations and functionals; determinants; rational and Jordan forms; inner product spaces; bilinear forms. PREREQUISITE: Mathematics 6241.

7261. Algebraic Theory. (3).

Theory of groups, rings, integral domains, and fields, with applications. PREREQUISITE: Mathematics 6261.

7262. Algebraic Theory. (3).

A continuation of Mathematics 7261, also including ideals, modules, tensor products, free algebras and Galois Theory. PREREQUISITE: Mathematics 7261.

7263- Field Theory. (3).

8263. Field theory including algebraic and transcendental extensions. Galois theory, topics from multilinear algebra. PREREQUISITE: Mathematics 7262.

7264- Lattice Theory. (3).

8264. Partially ordered sets, semilattices, completeness and conditional completeness, modularity, complementation, embedding theorems, applications to rings and groups. PREREQUISITE: Mathematics 7262.

7265- Group Theory. (3).

8265. General Topological groups, compact groups, general structure theory, free groups and group algebras. PREREQUISITE: Mathematics 7262.

7266- Homological Algebra and Ring Theory. (3).

8266. Modules over a ring, homomorphisms and tensor products of modules, functors and derived functors, homological dimension of rings and modules. PREREQUISITE: Mathematics 7262.

7311- Topics in Analysis. (3).

8311. Repeatable by permission. PREREQUISITE: Mathematics 7350.

7350. Real Variables. (3).

Jordan and Lebesgue measure in E^n , measurable functions; Lebesgue integrals; multiple and iterated integrals; metric spaces. PREREQUISITE: Mathematics 6351.

7351- Measure Theory. (3).

8351. Modern theories of integration on Hausdorff spaces; abstract measure spaces and topological groups. PREREQUISITES: Mathematics 7350, 7262, and 7411.

7355- Functional Analysis. (3).

8355. Vector spaces, Banach spaces, Hilbert spaces; linear functionals and operators in such spaces; spectral theory. PREREQUISITE: Mathematics 7350.

7356- Functional Analysis. (3).

8356. A continuation of Mathematics 7355-8355. PREREQUISITE: Mathematics 7355-8355.

7361. Complex Analysis. (3).

Power series; calculus of residues; conformal representations. (3). PREREQUISITE: Mathematics 6361.

7362. Complex Analysis. (3).

A continuation of Mathematics 7361. PREREQUISITE: Mathematics 7361.

7390. Special Functions 1. (3).

Infinite products; asymptotic series; generalized hypergeometric functions; the confluent hypergeometric function. PREREQUISITE: Mathematics 6391.

7391- Optimization Techniques. (3).

8391. Calculus of variations, gradient methods, Pontryagin maximum principle. PREREQUISITE: Mathematics 6391.

7392- Special Functions II. (3).

8392. Methods of obtaining and using generating functions; orthogonal polynomials with applications. PREREQUISITE: Mathematics 7390.

7393- Advanced Differential Equations. (3).

8393. Existence theorems, properties of solution depending on initial conditions and parameter dynamical systems, and applications. PREREQUISITE: Mathematics 3391, 6241.

7395- Stability Theory. (3).

8395. Theory of stability of solutions of ordinary differential equations; existence and uniqueness theorems; Lyapunov's direct method. PREREQUISITE: Mathematics 7393-8393.

7411. Point Set Topology. (3).

An axiomatic approach to compactness, separability, connectedness, metrizability and other topological properties. PREREQUISITE: Mathematics 6411.

7412- Point Set Topology. (3).

8412. A continuation of Mathematics 7411. PREREQUISITE: Mathematics 7411.

7413- Algebraic Topology. (3).

8413. A continuation of Mathematics 7411. PREREQUISITE: Mathematics 7411 and 7261.

7421- Topics in Geometry and Topology. (3).

8421. Repeatable by permission. PREREQUISITE: Mathematics 7412-8412

7531- Modern Differential Geometry. (3).

8531. Curves, tensor calculus, surfaces, first and second fundamental forms, mappings, length and area, variations problems, special surfaces. PREREQUISITE: Mathematics 7351-8351.

7821- Special Problems in Mathematics. (1-3).

8821. Directed individual study in a selected area of mathematics chosen in consultation with the instructor and the student's advisor. Repeatable by permission. PREREQUISITE: Permission of the instructor.

7822- Mathematical Reading and Research.

8822. (Variable and Repetitive Credit).

PREREQUISITE: Permission of the instructor.

7921- Topics in Differential Equations. (3).

8921. Repeatable by permission. PREREQUISITE: Mathematics 7393.

7922- Topics in Applied Mathematics. (3).

8922. Repeatable by permission. PREREQUISITE: Permission of the instructor.

†7996. Thesis. (3-6).

8011. Practicum in College Teaching of Mathematics. (Variable and Repetitive Credit)

The methods and techniques of teaching

mathematics at the college level; supervised instruction conferences, group discussions, students will participate in current research projects in mathematics methodology. PREREQUISITE: Permission of the instructor.

311. Advanced Seminar in Mathematics. (3).

PREREQUISITE: Permission of the Instructor. Repeatable by permission.

381. Advanced Seminar in Mathematics Education. (1-3).

Repeatable by permission. PREREQUISITE: Permission of the Instructor.

000. Dissertation. (1-5).

Independent research for the Ph.D. degree. Application for writing a dissertation must be filled out on an approved form after consultation with the Doctoral Advisors and Committee and filed with the Dean of the Graduate School.

MATHEMATICS COURSES FOR SECONDARY SCHOOL TEACHERS

51. History of Mathematics. (3).

The development of mathematics from the earliest times to the present; problem studies; parallel reading and class reports. PREREQUISITE: Mathematics 1182 or 1203 or 1212.

71. Workshop in Junior High Mathematics. (3).

This course is designed to provide in-service training, with emphasis on new course content.

74. Workshop in Senior High Mathematics. (3).

This course is designed to provide in-service training, with emphasis on metric geometry.

81. Linear Algebra for Teachers. (3).

Euclidean n -space; vector spaces; subspaces; linear independence and bases; linear transformations; matrices; systems of linear conditions; characteristic values and vectors of linear transformations.

82. Abstract Algebra for Teachers. (3).

A basic abstract algebra course designed especially for teachers. Topics will include; groups, rings, integral domains, fields; an axiomatic approach to the development of algebra; concepts of proof. PREREQUISITE: College Algebra.

81. Introduction to Analysis. (3).

Periodic functions; plane analytic geometry elementary functions; nature of the derivative; differentiation of algebraic and trigonometric functions; applications of the derivative; basic concepts of integration.

82. Introduction to Analysis. (3).

A continuation of Mathematics 7381; the definite integral with applications; integration of

elementary transcendental functions; techniques of integration applications of the definite integral; introduction to ordinary differential equations. PREREQUISITE: Math 7381 or equivalent.

7383. Introduction to Advanced Calculus. (3).

Set theory; symbolic logic; postulational systems; real number system; argument and proof; functions; sequences and limits; continuity; differentiability; integration and multiple integrals; infinite series. PREREQUISITE: Math 7382 or equivalent.

7511. Geometric Theory. (3).

Functions of geometry; extensions of Euclidean geometry; non-Euclidean geometry; introduction to projective geometry. PREREQUISITE: Mathematics 3111 or 7181.

7681. Probability for Secondary Teachers. (3).

Probability spaces, theory of statistical inference, physical interpretations of probability.

STATISTICS

6611. Statistical Methods. (3).

Intended for students in the engineering, physical and mathematical sciences. Binomial, hypergeometric, Poisson, Multinomial and Chi-square distributions; tests of randomness and non-parametric tests; t-test; tests of hypotheses; correlation analysis. PREREQUISITE: Mathematics 1211 or equivalent.

6613. Introductory Statistical Theory. (3).

Distribution of functions of random variable; limiting distributions; correlation and regression; Neyman-Pearson Lemma; likelihood ratio tests; sufficient statistics; point estimation. PREREQUISITE: Math 2322.

6631. Probability. (3).

Stationary and non-stationary stochastic processes; Markov chains and applications; continuous time Markov chains; Poisson processes and applications; Brownian motion; branching processes. PREREQUISITE: Statistics 3631.

7621. Quantitative Statistical Methods. (3).

Introduction to the concepts of random sampling and statistical inference, estimation and testing hypotheses; chi-square tests, simple regression analysis. PREREQUISITE: Mathematics 1203 and 1211.

7622. Quantitative Statistical Methods. (3).

A continuation of Statistics 7621; multiple and curvilinear regression analysis; analysis of variance; introduction basic experimental design. PREREQUISITE: Statistics 7621.

7641. Analysis of Variance. (3).

The analysis of variance in experimental statistics, single and multiple classification,

factorials, analysis of designed experiments including randomized blocks, Latin squares, split plots, simple confounded designs, multiple comparisons and orthogonal contrasts. PREREQUISITE: Statistics 6611 or 6613.

7642- Experimental Design. (3).

8642. Fundamental concepts in designing experiments, justifications of linear models, randomization, principle of blocking, use of concomitant observations, principle of confounding, fractional replication, composite designs, incomplete block designs. PREREQUISITE: Statistics 7641 or 7643.

7643. Least Squares and Regression Analysis. (3).

Simple, multiple, and curvilinear regression analysis, orthogonal polynomials, analysis of nonorthogonal and incomplete experiments by least squares, methods, computer methods for least squares problems. PREREQUISITE: Statistics 6611 or 6613.

7645. Sampling Techniques. (3).

Planning, execution, and analysis of sampling from finite populations; simple, stratified, multistage, and systematic sampling; ratio estimates. CO-REQUISITE: Statistics 6611 or 6613.

7647. Nonparametric Statistical Methods. (3).

Use of distribution-free statistics for estimation hypothesis testing, and correlation measures designing and analyzing experiments. PREREQUISITE: Statistics 6611, 6613.

7651- Theory of Linear Models. (3).

8651. Quadratic forms, point and interval estimation multivariate normal distribution; linear model general linear hypothesis of full rank computational techniques; functional relationships. PREREQUISITE: Statistics 6611, 6613, and 7654.

7652- Theory of Nonparametric Statistics. (3).

8652. The theory and development of distribution-free statistics. PREREQUISITE: Mathematics 7654

7654. Inference Theory. (3)

General theory of estimation and sufficient maximum likelihood and Bayesian estimator minimum variance estimators; Neyman-Pearson theory of testing hypotheses; elements decision theory. PREREQUISITE: Statistics 6611

7671- Advanced Topics in Statistics. (1-3)

8671. Directed individual study of recent developments in statistics. Repeatable by permission. PREREQUISITE: Permission of the Instructor.

†Grades of S, U, or IP will be given.

MECHANICAL ENGINEERING

PROFESSOR GORDON R. HOPKINS, *Chairman*

Room 108, Engineering Building

The degree of Master of Science is offered in Mechanical Engineering. The non-thesis option requires 33 semester credits of course work of which normally 21 are in the major area and 12 are in collateral areas. The thesis option requires 30 credits of which normally 18 are in the major area, 6 are in thesis and 6 are in a collateral area. Applications for admission should be sent to the Dean of The Graduate School. The Graduate School requires the receipt of test scores on the Miller Analogies Test or the Graduate Record Exam before approval of admission to graduate work. Student assistantships are available. Application should be made to the chairman of mechanical engineering about April 1.

Full time students may register for a maximum of 16 credits per semester; students admitted provisionally may register for 12 credits; student assistantships may register for nine credits of courses plus a thesis or problem course. For the degree at least 18 credit hours must be at the 7000 level. The remainder may be at either the 6000 or 7000 level. Credit for work taken elsewhere is limited to six credits. A "B" average is required for graduation.

Student programs are arranged in consultation with the mechanical engineering adviser. The following courses are offered on sufficient demand.

6314. Thermal Elastic Design. (3).

Derivation of the Heat Conduction equation and the equations of Elasticity. The Thermal Elastic Equations and Boundary Conditions. Examples involving statically and dynamically-thermo loaded beams, frames, plates, cylinders, shell welded joints, heat exchangers, nuclear reaction vessels, rocket engines, boilers, heat transfer equipment in general. PREREQUISITE: Consent of the instructor.

6315. Ventilation and Air Conditioning. (3).

Psychometrics, heating, ventilating, air conditioning, refrigeration. PREREQUISITE: MECH 3311.

6317. Solar Energy Applications. (3).

An introduction to the engineering application of solar energy including discussions of solar energy collectors, storage systems, and uses such as power generation and heating and cooling of buildings. PREREQUISITE: MECH 4311.

25. Advanced Mechanics of Materials. (3).

Unsymmetrical bending and torsion of flexural members of non-circular cross-section, beams of elastic foundations and other selected topics; deformation beyond the elastic limit, theories of failure.

26. Mechanics for Bio-Medical Engineers. (3).

The analyses of the bone and joint structure of the body related to the basic mechanical equations and properties. Mathematical modeling of bone structure, mechanical properties, static loading, dynamic loading, fatigue, wear, corrosion. PREREQUISITES: Mechanical Engineering 3322, 4321.

32. Fluid Mechanics for Bio-Medical Engineers. (3).

Elements of Hydrodynamics, Cardio-vascular System, Flow of Fluids in Tubes with Elastic Walls, Pulsatile Blood Flow Input Impedance and Pulse Waves, Vascular Walls, Flow through Arterial Walls, Models of the Circulation System. PREREQUISITE: Consent of Instructor.

41. Mechanical Engineering Analysis. (3).

Classical numerical and computer analysis of mechanical engineering problems.

51. Nuclear Engineering. (3).

Power generation. Peaceful uses of nuclear energy. PREREQUISITES: Upper division and consent of instructor.

71. Mechanical Vibrations. (3).

Kinematics of harmonic and non-harmonic vibrations: systems of one and several degrees of freedom, free and forced vibrations; self-excited vibration. PREREQUISITE: Differential Equations.

01. Mechanics of Deformable Bodies. (3).

Analysis of non-rigid bodies, statically indeterminate members, instability-buckling loads, thick-walled cylinder analysis and other selected topics.

02. Theory of Continuous Media. (3).

Analysis of stress and deformation at a point; derivation of the fundamental equations in Cartesian tensor notation by application of the basic laws of conservation of mass, energy, and momentum in mechanics and thermodynamics. PREREQUISITE: Consent of instructor.

03. Experimental Stress Analysis. (3).

Application of electric resistance strain gage, photoelasticity and brittle lacquer techniques to the solution of stress analysis problems.

04. Theory of Elasticity. (3).

Development and clarification of the theories of elasticity used in introductory strength of material. Development and strength of material. Development and application of more advanced

methods for analysis. PREREQUISITES: MECH 3322 or equivalent.

7305. Advanced Fluid Flow I. (3).

Basic equations and perfect fluid theory. Mathematical, numerical, graphical and analog methods for solving ideal flow problems. Viscous fluid theory and introduction to boundary layer theory. Unsteady flows, flows in rotating systems, and density-identified flow. Review of mathematical concepts involved in these topics. PREREQUISITE: Mechanical Engineering 3331 or equivalent.

7306. Advanced Fluid Flow II. (3).

Continuation of Mechanical Engineering 7305.

7307. Theory of Plasticity. (3).

Development of equations and theories for materials in the inelastic stress range. Time-dependent analysis, energy methods, volume change. PREREQUISITE: MECH 3322 or equivalent.

7310. Fluid Power Engineering. (3).

Hydraulic- and air-flow pipes. Pneumatic and hydraulic fluid power-elements and systems. Input-output energy transfer devices.

7311. Advanced Topics in Fluid Flow I. (3).

Subsonic and supersonic compressible flow, shockwaves, and selected topics. PREREQUISITE: Mechanical Engineering 7306 or consent of instructor.

7312. Advanced Topics in Fluid Flow II. (3).

Continuation of Mechanical Engineering 7311.

7321. Advanced Heat Transfer. (3).

Steady and unsteady state. Walls and heat exchangers.

7322. Psychrometric Analysis. (3).

Psychrometrics. Heating, air conditioning, refrigeration.

7331. Advanced Thermodynamics I. (3).

Engineering thermodynamics. PREREQUISITE: Mechanical Engineering 3311 or equivalent.

7332. Advanced Thermodynamics II. (3).

Continuation of 7331. PREREQUISITE: Mechanical Engineering 7331.

7334. Biomedical Applications of Heat and Mass Transfer. (3).

Heat transfer in biological systems. Mass transfer in biological systems. Heat-mass conversion in biological systems. First and second law of thermodynamics applied to biological systems. PREREQUISITE: MECH 3331.

7342. Dimensional Analysis. (3).

Units, dimensionless numbers. Applications to combustion, fluid dynamics and heat transfer. Similarity and model theory.

7351. Nuclear Applications.(3).

Power generation. Peaceful uses of nuclear energy.

7352. Nuclear Defense. (3).

Effects of nuclear weapons. Civil defense. Shelter design.

7361. Advanced Materials Science. (3).

Study of the structure and properties of engineering materials using solid-state physics. PREREQUISITE: Mechanical Engineering 3361.

7365. Corrosion.(3).

Fundamental causes and mechanisms; corrosion control; study of specific corrosion problems.

7371. Advanced Mechanical Vibrations. (3).

Lagrange's and Hamilton's principles in the study of vibrating systems. Methods of solution for the equations of motion will be presented including digital computer techniques. PREREQUISITE: Mechanical Engineering 4371 or 6371.

7391. Projects I. (3).

Independent investigation of a problem selected in consultation with instructor; report required.

7392. Projects II. (3).

Independent investigation of a problem selected in consultation with instructor; report required.

†7996.Thesis. (3-6).

†Grades of S, U, or IP will be given.

MUSIC

PROFESSOR ROBERT SNYDER, *Chairman*

Room 123B, Music Building

In the Department of Music, graduate students may select from the following degree programs:

I. Master of Music with a major in music

(Choose one of the four concentration areas.)

A. Applied Music (Requirements: 14 hours in one of the areas listed below, 6 hours in one other area listed below, and 9 hours of electives in other areas in music. A credit-bearing recital or thesis is also required.)**1. Composition****2. Piano****3. Organ****4. Strings****5. Brasses****6. Winds****7. Percussion****8. Vocal Pedagogy**, consisting of 6 hours in applied voice, 6 hours in vocal pedagogy, 6 hours in opera, MUAP 7617: Lecture Recital, and 9 hours in music electives (these elective hours must include 2 semesters of song repertory if the student has not taken undergraduate MUHL 4002 and 4003: Song Repertory I and II, or the equivalent). A minimum of 6 hours undergraduate credit in two of the following three languages is required: French, German, Italian.**9. Vocal Performance**, consisting of 12 hours in applied voice, 2 credit-producing recitals, 6 hours in opera, and 9 hours in music electives (these elective hours must include 2 semesters of song repertory if the student has not taken undergraduate MUHL 4002 and 4003: Song Repertory I and II, or the equivalent). A minimum of 6 hours undergraduate credit in each of the following languages is also required: French, German, Italian.**10. Opera and Conducting**, consisting of 21 hours in a major area as follows: MUSE 7701, MUAP 7623, MUHL 7001, MUHL 7002, and MUAP 7620 (3 hours each), and MUAP 7622 (6 hours); 6 hours in a minor area to be chosen from Applied Music, History and Literature, Music Theory; 3 elective hours; MUAP 769 (Production Practicum), 3 hours.**11. Opera Production and Directing**, consisting of 21 hours in a major area as follows: MUHL 7001, MUHL 7002, MUAP 7621 (3 hours each), MUAP 7623 and MUAP 7622 (6 hours each); 6 hours in a minor area to be chosen from Applied Music, History and Literature, Theatre; 3 elective hours; MUAP 769 (Production Practicum), 3 hours.**B. Sacred Music**, consisting of 12 hours in a sacred music core, 6 hours of applied music, 3 hours of choral techniques, and 9 hours of electives, 6 of which may be in music. A 3-semester hour recital is also required. Electives are to be planned in consultation with the major professor and may be selected from, but not limited to, courses currently available in Speech and Drama and Business Administration.**C. Music Theory****1. A total of 33 hours is required of students who do not elect to write a thesis to be distributed as follows:** 15 hours in theory, 6 hours in a minor concentration, and 12 hours in electives that include MUHL 7408, Studies in Musicology.**2. A total of 30 hours of course work is required of students who elect to write a thesis to be distributed as follows:** 15 credit hours in theory, 6 hours in a minor concentration, and 9 hours of electives in music. A 3 credit hour thesis is also required.

The minor concentration areas and elective hours referred to may be chosen from the curricula in applied music, music history, music education, and sacred music.

D. Music History

1. A total of 33 hours is required of students who do not elect to write a thesis distributed as follows: 21 hours in music history, 9 hours in a minor concentration area, and MUHL 7408, Studies in Musicology OR 18 hours in music history, 2 other minor concentration areas of 6 hours each, and MUHL 7408, Studies in Musicology.
2. A total of 30 hours of course work is required of students who elect to write a thesis distributed as follows: 18 hours in music history, 9 hours in a minor concentration area, and a 3 credit hour thesis OR 15 hours in music history, 2 other minor concentration areas of 6 hours each, and a 3 credit hour thesis.

The minor concentration areas referred to may be chosen from the curricula in applied music, music theory, music education, or in sacred music.

A reading knowledge of one foreign language must be demonstrated before the student may be admitted to candidacy.

Master of Arts with a major in music

(Choose one of two concentration areas.)

A. *Musical Arts: Applied Music*, consisting of a major concentration area of 14 hours, an outside minor of 6 hours, and 9 hours of music electives to be selected from the areas of music history and music theory. A credit-bearing recital is also required.

B. Musical Arts: Music History

1. A total of 33 hours is required of students who do not elect to write a thesis distributed as follows: 21 hours in a major concentration area, a 9-hour minor concentration area from an area other than music, and MUHL 7408; or, 18 hours in a major concentration area, two 6-hour minor concentrations chosen from areas other than music, and MUHL 7408.
2. A total of 30 hours of course work is required of students who elect to write a thesis distributed as follows: 18 hours in music history, and either one 9-hour minor or two 6-hour minors chosen from areas other than music. A 3-6 credit hour thesis is required.

GENERAL BASIC REQUIREMENTS FOR MUSIC MAJORS ARE OUTLINED AS FOLLOWS:

Prerequisites to graduate standing in music.

- A. A satisfactory grade shall be made on the aural and written theory qualifying examinations. A comprehensive undergraduate course in theory, analysis, and ear-training (MUTC 4202) is recommended for graduate students in need of review and preparation for graduate work in theory. A satisfactory grade in this course will satisfy the graduate entrance requirement in theory.

- B. The qualifying examination in music history and literature shall be taken and identified deficiencies removed.
 - C. A successful audition (or acceptable compositions in various media for candidates who plan a major concentration in composition) shall be presented when applicable to the anticipated degree program.
- II. Prerequisites to degree candidacy in music.
 - A. The program of the student's intended degree shall be planned.
 - B. The student shall declare his major and minor concentration areas. Admission to graduate standing in the proposed major and minor must be approved by the area chairman.
 - C. A thesis topic shall be chosen and approved on those degree programs involving the thesis.
 - D. Satisfactory completion of the keyboard proficiency examination.
 - III. Prerequisites for graduation.
 - A. A student with a concentration in applied music must successfully complete an audition for his public recital and shall perform that recital with distinction.
 - B. A student of whom a thesis is required shall submit an acceptable thesis.
 - C. The comprehensive examination/s shall be taken and passed.

Graduate entrance examinations in music theory and music history are generally held on the day preceding graduate registration for the fall, spring, and summer sessions.

Outstanding performers may be recommended for the Performer's Certificate by their major professor at the time the recital audition is held. Following a favorable recommendation of the audition committee, the Chairman of the Department of Music will convene a panel of the applied music faculty to hear the recital and make a recommendation concerning the award. Complete details of this outline may be had by writing the Director of Graduate Studies in Music, Department of Music.

NOTE: Course numbers following the name of the course are former numbers. If credit was received for the course under the former number, credit cannot be received under the new number.

MUSIC THEORY AND COMPOSITION (MUTC)

7001. Advanced Ear Training. (3). (7035).

Harmonic, contrapuntal, and melodic dictation drawn from masterworks of composers from Haydn to the present. Employment of all clefs. Sight singing.

7101. Pedagogy of Theory. (3). (7033).

A practical course in classroom procedure. Demonstrations by students and instructor in teaching the rudiments, elementary and advanced theory, various styles of counterpoint, and ear training. A study of various theoretical systems. Bibliography.

7102. Analytical Techniques. (3). (7034).

Techniques of analysis of styles and structure of music from all periods of the history of music.

7103. Advanced Orchestration. (3). (7036).

Investigation of orchestration practices of the great composers from the classical period to the present. Sections of non-orchestral works by representative composers will be orchestrated in the style of the period of their composition.

7201. Theory I. (3). (7031).

A study of styles of the sixteenth, seventeenth and eighteenth centuries.

7202. Theory II. (3). (7032).

A study of classic, romantic, impressionistic and modern styles.

7501. Composition. (2, 3 or 6). (7030).

Free composition in all forms. Applicants to this course are required to submit original works in various forms and media as proof of maturity and technical preparation for graduate work. The course may be repeated with the instructor's permission for successive semesters.

Composition is taught as applied music. Students receive the equivalent of two half-hour lessons per week. The fee for this instruction is \$50.

†7599. Composition Practicum. (3-6).

†Grades of S, U, or IP will be given.

MUSIC HISTORY AND LITERATURE (MUHL)**6002. Song Repertory I. (2).**

Basic repertoire of old Italian airs and German lieder, as well as an introduction to the French repertoire of the nineteenth century.

6003. Song Repertory II. (2).

The French art song and solo vocal works of other nationalistic schools as well as English and American song literature.

6351. Problems in Editing. (1-3). (6143).

The preparation of performance editions from facsimiles of early prints and manuscripts involving the transcription of tablature and mensural notation and/or continuo realization. May be repeated for credit. PREREQUISITE: Permission of the instructor.

6403. Baroque Music. (3). (6111).

The age of the basso continuo, 1580-1750; opera and oratorio, instrumental forms, keyboard music, and performance practices. PREREQUISITE: Permission of the instructor.

6404. Classic Music. (3). (6112).

Rococo and Pre-classic music in England, France, Italy, Spain and Germany. The Viennese classical tradition. PREREQUISITE: Permission of the instructor.

6405. Romantic Music. (3). (6113).

The development of romanticism in music from late Beethoven through Bruckner. PREREQUISITE: Permission of the instructor.

6406. Music in the Twentieth Century. (3). (6114).

Music since Debussy and Mahler with emphasis on current developments and techniques. PREREQUISITE: Permission of the instructor.

6407. The Opera and the Music Drama. (3). (6133).

A survey of the opera before Richard Wagner, study of Wagner's music dramas and operas of his contemporaries; dramatic and musical significance of each phase of the development of the two forms. PREREQUISITE: Permission of the instructor.

7001. Opera Repertory I. (3). (7831).

A study of operatic repertory from its beginning through the operas of Rossini and Donizetti. Particular emphasis will be given to roles suitable for the voice category of the individual student.

7002. Opera Repertory II. (3). (7832).

A study of operatic repertory beginning with Verdi and continuing to present time. Emphasis will be given to roles suitable for the voice category of the individual student.

7352. Chamber Music. (3). (7921).

An elective course in the performance of music in various styles, periods, and media. Open to pianists, instrumentalists, and singers with technical proficiency equivalent to undergraduate senior level. Public performance required each semester.

7400. Bibliography and Research Methods. (3). (7000).

A survey of the fields of historical and systematic investigation in music with bibliographical studies and research analysis. Required of all students who intend to write a thesis.

7401. Medieval Music. (3). (7131).

The history of music from classical antiquity to 1400.

7402. Renaissance Music. (3). (7132).

The history of music from 1400 to 1600.

7407. Studies in Music History. (3). (7137).

May be repeated for credit when topics vary. Topics may be selected from the following: Sonata History; Opera History; 19th Century Art Song; The Polyphonic Mass to 1800; Cantata History; Symphony History; Brahms; Mozart

Bach; Beethoven; Debussy-Ravel; Schoenberg-Stravinsky.

7408. Studies in Musicology. (3-6). (7993).

Independent investigation of a research problem, or directed reading in selected areas of musicology chosen in consultation with the instructor. PREREQUISITE: Permission of the instructor.

†7999. Thesis. (3-6).

†Grades of S, U, or IP will be given.

SACRED MUSIC (MUSA)

6001. Judeo-Christian Music. (3). (6137).

History of Church Music from Temple to 1000 A.D. Considerable emphasis on Hebrew music, its use as related in Scripture and the form and use of service music in the present day temples. Music for Sabbath and festival services.

7001. Oratorio and Cantata. (3). (7431).

A study of the larger musical forms of the Church with performances by performing majors. An analytical study of style in performance and in content with suggested use of instruments in addition to the organ. PREREQUISITE: Graduate standing in music.

7101. Church Music Arranging. (3). (7432).

A course designed to train the student in the devices of creating anthems from hymn-tunes, some choral arranging for special church needs, and instrumentation for ensembles which would be added to the fundamental use of the organ. Useful in creating Biblical musical productions for service and festival occasions. PREREQUISITE: Graduate standing in music.

7201. The Church and Music Education. (3). (7430).

A comprehensive program constructed to enable a church musician to present programs, study courses, and musical activities designed specifically to educate the taste of various congregations at all age levels. PREREQUISITE: Graduate standing in music.

APPLIED MUSIC (MUAP)

(INDIVIDUAL LESSONS)

REGISTRATION: Students will register for individual lessons at the same time and the same manner that they register for other courses.

Applied music courses may be repeated for credit in subsequent semesters, but not for the purpose of improving the grade originally earned.

7001. Graduate Ensemble. (1). (7010).

Ensemble participation may be required by any concentration in music and can be counted as elective credit in all. Specific ensemble assignments will be made by the faculty advisor in charge of the student's program.

7620. Independent Study in Symphonic and Operatic Conducting. (3). (7836).

A detailed study of advanced conducting techniques including styles, mechanics, score reading and preparation, and rehearsal techniques and organization. Practical experience in orchestral and operatic conducting. PREREQUISITES: MUSE 7701 and/or permission of instructor.

7621. Independent Study in Scenic and Lighting Design for the Lyric Stage. (3). (7837).

A detailed study of scenic and lighting design for the Lyric Stage. Practical projects in both scenic and lighting design. PREREQUISITES: MUAP 7623 and/or permission of instructor.

7622. Independent Project in Opera Direction. (3). (7835).

Actual staging or musical direction of an opera workshop or opera theatre production. May be repeated for credit. PREREQUISITES: MUAP 7623 and permission of instructor.

7623. Independent Study in Opera and Musical Theatre Production. (3). (7830).

A detailed study of opera and musical theatre production to include: choosing of repertoire, translations, budget planning, casting, obtaining of materials, and promotion. Practical experience in the technical aspects of opera and musical theatre. (May be repeated for credit.) PREREQUISITE: Permission of instructor.

†7699. Production Practicum. (3-6). (7997).

Required of majors in Opera and Conducting and Opera Production and Directing.

†Grades of S, U, or IP will be given.

FEES: See pages 20 and 21 of this bulletin. Fees are paid to the University at the office of the Business Manager.

CREDITS AND GRADES: A full hour lesson will be given all persons enrolled in graduate applied music, regardless of credit-hours awarded. Music Education majors, applied music minors, and applied music electives will be allowed to register for two hours of credit only. Applied majors may register for two to six hours of credit, as permitted. Grades are awarded in accordance with the jury system and have the same significance as in any other subject. All graduate applied music juries shall be scheduled for fifteen minutes.

Instrument	Music Education Majors, Applied Music Minors, App- lied Music Electives. No Recital Required 2 Hours Credit	Applied Music Majors, Applied Music Minors, Applied Music Electives. Recital Required 2-6 Hours Credit	Lecture Recital 3 Hours Credit†	Recital 1-3 Hours Credit†
Trumpet	6111	7111	7117	7119
Horn	6121	7121	7127	7129
Trombone	6131	7131	7137	7139
Tuba	6141	7141	7147	7149
Piano	6311	7311	7317	7319
Harpsichord	6321	7321	7327	7329
Organ	6331	7331	7337	7339
Percussion	6411	7411	7417	7419
Violin	6511	7511	7517	7519
Viola	6521	7521	7527	7529
Cello	6531	7531	7537	7539
Bass	6541	7541	7547	7549
Harp	6561	7561	7567	7569
Voice	6611	7611	7617	7619
Flute	6711	7711	7717	7719
Oboe	6721	7721	7727	7729
Clarinet	6731	7731	7737	7739
Saxophone	6741	7741	7747	7749
Bassoon	6751	7751	7757	7759

†Grades of S, U, or IP will be given.

MUSIC EDUCATION (MUSE)

In the Division of Music Education, students may select from the following programs:

- A. Master of Education - Music Education. This program is designed for individuals holding a teaching certificate in music. If a candidate is not certified to teach music, all requirements for certification must be met prior to admission to graduate study. A satisfactory grade must be made on the music theory and the music history and literature qualifying examination before degree candidacy in music may be declared.

Requirements:

Music Education - 9 semester hours:

MUSE 6801, 7402, and 7403.

Education - 9 semester hours, to include EDFD 7001 (EDFD 7012, 7021, or 7031 may be elected by individuals who have completed undergraduate or graduate course work in cultural foundations), EDPS 7121 or EDPS 7111 or 7112 and EDUC 7401.

Music Electives - 6-9 semester hours.

Music Education Electives - 6-9 semester hours.

Music and Music Education Electives will total 15 semester hours.

Additional information on this program may be obtained from the Division of Music Education.

Minimum Total: 33 semester hours of graduate credit.

- B. Education Specialist - Curriculum and Instruction (Music Education). This program is designed for individuals holding a Master's degree in Music Education. A satisfactory grade must be made on the music theory, the music history and literature, and the music education qualifying examination before degree candidacy may be declared unless these examinations have previously been taken at Memphis State University.

Requirements:

Music Education - 24 semester hours, to include MUSE 6801, 7402, 7403, and EDUC 8000 or 8001.

Music - 21 semester hours, to include MUHL 7400
Education - 12 semester hours, to include EDFD 7001/8001 (EDFD 7012/8012, 7021/8021 7031/8031 may be substituted if the student has completed a course in cultural foundations)

at the undergraduate or graduate level), EDPS 7111/8111 or 7112/8112 or 7121/8121, EDUC 7401, EDRS 7521.

Electives - 9 semester hours in the College of Education (including Music Education)

Additional information pertaining to specific course requirements in the major and collateral areas may be secured from the Division of Music Education.

Minimum total: 66 semester hours of graduate credit with a minimum of 9 semester hours in courses numbered 8000 or above.

C. Doctor of Education - Curriculum and Instruction (Music Education). This program is designed for individuals holding a Master's degree in Music Education. A satisfactory grade must be made on the music theory, the music history and literature, and the music education qualifying examinations before degree candidacy may be declared unless these examinations have been previously taken at Memphis State University.

Requirements:

Music Education - 42 semester hours, to include MUSE 6801, 7402, 7403, 7201 or 7202 or 7203 or 7204, EDUC 8950.

Music - 27 semester hours to include MUHL 7400. Education - 18 hours, to include EDFD 7001/8001 (EDFD 7012/8012, 7021/8021, 7031/8031 may be substituted if the student has completed a course in cultural foundations at the undergraduate or graduate level), EDPS 7111/8111 or 7112/8112 or 7121/8121, EDUC 7401, EDRS 7521, 7541/8541, 8522 or 8542.

Electives - 12 semester hours in the College of Education (9 of which may be in Music Education).

Candidates, in consultation with their adviser, may form a supplemental concentration of 9-12 hours in a field outside Music and Education, such as communications, business, allied arts, psychology, sociology, philosophy, etc. Three hours of education electives may be applied to this concentration with remaining hours drawn from music electives.

Additional information pertaining to specific course requirements in the major and collateral areas may be secured from the Division of Music Education.

Minimum total: 99 semester hours of graduate credit with a minimum of 21 semester hours selected from courses numbered 8000 or above.

6001. Orff Schulwerk Workshop for Classroom Teachers. (3). (6206).

A broad, practical introduction to the use of the Orff Schulwerk method of elementary music teaching. Development of performance leadership skills stressed. Not open to music majors. PREREQUISITE: One course in music methods or equivalent in experience.

6201. Special Problems in the Teaching of Music. (1-3). (6201).

This course provides for class or individual study of the problems and opportunities faced by the person who teaches music in the schools, for classroom teachers, music teachers and supervisors, principals, and administrators. May be repeated for credit but not for the purpose of

improving the grade originally earned. May not exceed six semester hours of credit. PREREQUISITE: Permission of the instructor/major adviser.

6504. String Pedagogy. (3). (6170).

A study of various methods of teaching strings with special emphasis on contemporary theories of pedagogy; observation and laboratory teaching in MSU String Preparatory Department and the Suzuki Talent Education Division. For string majors. PREREQUISITE: Permission of instructor.

6801. Teaching Music Comprehensively. (3). (6205).

A methods course designed to bring music theory, history, literature, performance, composition, and analysis to bear on the teaching of music at any level - elementary, junior high, high school, college, and private studio.

6802. Introductory Workshop in Orff Schulwerk. (1-3). (6202).

A study of basic Orff Schulwerk techniques including body movement, soprano recorder, percussion, vocal performance, improvisation, and arranging. PREREQUISITE: Graduate standing in Music.

6803. Intermediate Workshop in Orff Schulwerk. (1-3). (6203).

A study of intermediate level Orff Schulwerk techniques including modal harmonization, irregular rhythms, alto recorder, performance, and more extensive improvisation and arranging. PREREQUISITE: MUSE 4802 or 6802 or the equivalent.

6804. Teachers Workshop in Orff Schulwerk. (1-3). (6204).

A study of advanced Orff Schulwerk techniques including original compositions, complex form, movement and instrumental arrangements, tenor and bass recorder performance, and advanced improvisation. PREREQUISITE: MUSE 4803 or 6803 or the equivalent.

7201. Techniques and Materials of Elementary School Music. (3). (7232).

Advanced use of contemporary and traditional teaching strategies, including Orff Schulwerk and Kodaly materials, experimental approaches and rote methods. PREREQUISITE: One course in Orff Schulwerk or equivalent experience.

7202. Music in Early Childhood. (3).

Experimental and traditional music activities and teaching strategies designed to integrate the world of formal and informal sound into the three to six-year old's life. Open to all College of Education majors.

7203. Choral Literature and Techniques. (3). (7233).

A survey of choral literature from Dunstable to the present, using scores, records, and class performance. Analysis of the scores in terms of

style, form, and performance problems. Techniques of teaching and conducting unfamiliar styles.

7204. Instrumental Literature and Techniques. (3). (7234).

Specific and intensive research in each student's major instrument, covering (1) history of the instrument, (2) texts, methods and periodicals, (3) orchestral studies, (4) solo and ensemble literature, and (5) listening and performance.

7205. Music Curriculum Development for Pre-School and Elementary School. (3). (7237).

The study and appraisal of curricula plans and materials for the sequential development of musical learnings in children; contemporary techniques for implementing; relationships to other areas of instruction.

7206. Curriculum Development for Music in the Secondary Schools. (3). (7238).

The study of general and specialized curricula in the junior and senior high school; their inter-relationships and specific goals in the light of musical growth in the adolescent years.

7207- Tests and Measurements in Music Education. 8207. (3). (7239).

The investigation of evaluative tools in music education, formulation and utilization of measurement devices in music teaching and research.

7208- Administration and Supervision of Music. (3). 8208. (7240).

An integrating course which involves the administrative considerations basic to all facets of music education programs, K-12. Objectives, organization, staffing, financing, facilities, public relations, Federal programs.

7209- Internship in Music Administration and 8209. Supervision. (3). (7241).

An advanced laboratory experience for the student, with assignment to a school system in the area where he will serve as an assistant to the local Director of Music. A continuous evaluation of his experience will be effected and recorded through weekly seminars under the direction of a faculty member of the Division of Music Education.

7210- Projects in Elementary Music Curriculum 8210. Development, Implementation and Supervision. (3). (7242).

An in-depth course employing the processes of lecture, seminar, and practicum. Basic curriculum principles; program planning and development; preparation and presentation of courses in selected classrooms; evaluation.

7211- Projects in Secondary Music Curriculum 8211. Development, Implementation and Supervision. (3). (7243).

Similar to 7210. Provision for individual projects in choral or instrumental areas.

7212- Music Administration in Higher 8212. Education. (3).

Current techniques of junior and 4-year college Music Department organization - curriculum development, workshops, non-credit education, facility planning, financing, staffing patterns, community relations, leadership.

7401- Musical Aesthetics and Music Education. 8401. (3). (7230).

The theories of philosophers, psychologists, and musicians from antiquity to the present time related to the justification, values, and practices of music education in everyday life.

7402. History and Philosophy of Music Education. (3). (7235).

An examination of the historical and philosophical foundations which underline the curricula and instructional programs in music.

7403. A Survey of Research in Music Education. (3). (7236).

Designed to acquaint students with what is happening in theoretical and practical field research, including studies in psychology of music; to hypothesize and develop potential research problems.

7501. Vocal Pedagogy I. (3). (7833).

Processes in voice production, respiration, phonation, articulation, resonance. Psychological, physiological, and acoustical problems. Voice classification, quality, diction, breath support, breath control.

7502. Vocal Pedagogy II. (3). (7834).

A study of different approaches to the teaching of voice including the observation of faculty members instructing students. Assignment of students to each member of the class for supervised teaching. PREREQUISITE: MUSE 7501.

7701. Advanced Conducting. (3). (7231).

Conducting the concert band, the symphony orchestra, and the chorus in the larger musical forms. Emphasis on interpretation. PREREQUISITE: Permission of instructor.

†7999. Thesis. (3-6).

†Grades of S, U, or IP will be given.

PHILOSOPHY

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PROFESSOR GENE JAMES, *Chairman*

Room 319, Clement Hall

The program of graduate study leading to the M.A. degree has been designed to provide the student with a broad base in the standard branches of philosophy, with specialized work at the advanced level in Metaphysics, History of Philosophy, Epistemology, Logic, Ethics, Aesthetics, Philosophy of Religion, Philosophy of Science, Philosophy of Language, and Political Philosophy.

PREREQUISITES: An undergraduate degree with a minimum of 18 semester hours in philosophy including courses in logic, ethics, and the history of philosophy. Students who lack the proper prerequisites may be admitted to the graduate program only on the condition that they take the appropriate undergraduate courses as soon as possible.

REQUIREMENTS: (1) A total of 33 semester hours for the student who does not write a thesis; (2) A total of 30 semester hours for the student who writes a thesis, 21 of which must be in philosophy and 18 of which in courses designated primarily for graduate students. No more than six hours may be credited for thesis. (3) A comprehensive written examination covering work taken at the graduate level. (4) A reading knowledge of a foreign language in which there is a significant body of literature relevant to the student's research interests. The language requirement may be waived if it is not essential to a student's program. (5) If a thesis is written, this will be under the supervision of a member of the graduate faculty. An oral defense of the thesis before a committee composed of the graduate faculty is also required. The completed thesis must be submitted at least one month before graduation.

6011. Theory of Knowledge. (3).

A critical study of the basic problems of epistemology, with readings in the important philosophers.

6021. Metaphysics. (3).

An analysis of the basic metaphysical concepts and a critical study of old and new theories of the nature of being.

6031. Hegel. (3).

A detailed investigation of some of Hegel's most influential works. **PREREQUISITES:** Philosophy 3311 and two additional courses in philosophy.

6221. Plato. (3).

An examination of the philosophy of Plato. Readings from the dialogues.

6232. Aristotle. (3).

An examination of the philosophy of Aristotle. Readings from the work of Aristotle.

6341. Continental Rationalism. (3).

Continental philosophy in the seventeenth century; Descartes, Spinoza, Malebranche, Leibniz, and Wolff.

6351. British Empiricism. (3).

A critical and historical review of the philosophies of Locke, Berkeley, and Hume. Special attention will be given to the place of British Empiricism in modern thought.

6372. Kant. (3).

An intensive study of the major philosophical works of Immanuel Kant with special attention given to *The Critique of Pure Reason* and to the relation between Kant's critical philosophy and his ethics, aesthetics, and philosophy of religion.

6421. Philosophy of Mind. (3).

A critical examination of contemporary positions on the mind-body problem, the problem of other minds, and related topics. **PREREQUISITES:** Three courses in philosophy or two courses and permission of instructor.

6422. The Rise of Analytic Philosophy. (3).

The development of the views of analytic philosophers from Russell and Wittgenstein to Ayer, Wisdom, and others.

6431. Philosophy of Language. (3).

A critical examination of contemporary problems in the philosophy of language to include such topics as theories of meaning, reference, and analyticity. **PREREQUISITES:** Three courses in philosophy or two courses and permission of instructor.

6441. Phenomenology and Its Historical Background. (3).

A reading and discussion of basic texts in translation of Husserl's *Ideas*, *Cartesian Meditations* and from the *Crisis of European Science and Phenomenology*.

6521. Contemporary Ethical Theory. (3).

An examination of contemporary ethical and metaethical theories.

6632. Advanced Logic. (3).

The nature of axiomatic systems, techniques of formalization, and the logical foundations of mathematics.

7051. Seminar in Systematic Philosophy. (3-6).

An intensive study of one philosophical problem or group of related problems not covered in other graduate seminars. The content of this course in any particular semester will be announced in the class schedule. May be repeated for credit if not to improve grade.

7201. Seminar in Classical Philosophy. (3-6).

An intensive study of a major figure or movement within the ancient or medieval period of Western philosophy. (May be repeated for a maximum of six credits.)

7203. Seminar in Contemporary Philosophy. (3-6).

An intensive study of a major figure or movement within contemporary philosophy. (May be repeated for a maximum of six credits.)

7301. Seminar in Modern Philosophy. (3-6).

An intensive study of a major figure or movement within the modern period of Western philosophy. (May be repeated for a maximum of six credits.)

7541. Social and Political Philosophy. (3).

An examination of some of the major speculative and critical philosophies of society and the state with attention to such problems as the philosophical foundations of the social sciences, the nature of political authority, rights, obligations and related problems.

7671. Philosophy of Science. (3).

Lectures, organized discussions and reports, centering around contemporary problems of analysis of scientific methods, arguments,

terms, and their social and philosophical consequences.

7721. Aesthetics. (3).

A study of the fundamental issues in aesthetics through an examination of the important classical and contemporary theories of art.

7731. Philosophy of Religion. (3).

A critical evaluation of various rational and empirical philosophies of religion. The idea of a philosophical theology and its relation to such problems as the nature of religious language, religion and science, reason and revelation, will be examined.

†7994. Reading and Research. (3-6)

Individual supervision under a member of the graduate faculty on a topic within the student's major field of interest.

†7996. Thesis. (3-6)

†Grades of S, U, or IP will be given.

PHYSICS

PROFESSOR CARROLL IJAMS, *Chairman*

Room 216, Manning Hall

Students majoring in Physics for the Master of Science Degree are required to present as a prerequisite 20 semester hours of undergraduate physics courses including upper division Mechanics, Electricity and Magnetism, and approved Mathematics courses in Calculus and Differential Equations.

After meeting the general degree requirements for admission to The Graduate School, students selecting Physics as a major subject will be assigned to the Graduate Committee who must approve and direct their course of study.

With permission of the Graduate Committee, the student may pursue either a thesis or non-thesis program. In either program a comprehensive examination must be satisfactorily completed before being recommended for graduation.

If the thesis program is selected, the following minimum requirements must be satisfied.

(1) 18 semester hours of physics courses numbered 7000 or above, including Physics 7100, 7200, 7300, 7520, and 7996.

(2) Sufficient additional courses to satisfy a minimum of 30 semester hours of work in which 9 may be in a collateral field of study.

If the non-thesis program is selected, the following minimum requirements must be satisfied.

(1) 21 semester hours of physics courses numbered 7000 or above, including Physics 7100, 7200, 7300 and 7520.

(2) Sufficient additional courses to satisfy a minimum of 33 semester hours of work in which 9 may be in a collateral field of study.

6051. Astrophysics. (3).

Application of radiation laws to the interpretation of stellar structure. Introduction to radiative transfer in atmospheres. The spectral and luminosity classification of stars, stellar populations and evolution.

Three lecture hours and occasional observation periods per week.

6052. Astrophysics. (3).

A continuation of Physics 6051, with emphasis on interstellar matter, stellar systems, galactic structure radio astronomy.

Three lecture hours and occasional observation periods per week.

6110. Nuclear Physics. (3).

Properties of atomic nuclei, radioactive transitions, alpha, beta and gamma decay. Binding energy, nuclear forces and nuclear models.

6211. Optics. (4).

Geometrical and physical optics including such topics as thin lenses, spherical mirrors, lens aberrations, optical instruments, waves interference, diffraction, absorption, transmission, and scatterings. PREREQUISITE: Physics 3212; Mathematics 2322.

Three lecture, three laboratory hours per week.

6410. Introduction to Quantum Theory. (3).

Experimental basis of quantum theory; development of the Schrodinger equation and its solution of simple systems; selected applications in atomic and molecular structure.

Three lecture hours per week.

6510. Thermodynamics. (3).

A mathematical treatment of thermodynamics, including such topics as work, energy, enthalpy, entropy, reversible and irreversible processes, equilibria, specific heats, and phase transitions. **RECOMMENDED PREREQUISITE:** Physics 3112 or 3212.

Three lecture hours per week.

6610. Solid State Physics. (3).

Consideration of such topics as lattice vibrations, specific heats, electrical and thermal conductors, in solids, magnetism.

Three lecture hours per week.

6710. Spectroscopy. (3).

Atomic and molecular structure as revealed by the study of radiation emitted and absorbed by substances. Emphasis is on the vector model of the atom and an introduction to infrared and Raman spectra of molecules.

6911. Introduction to Theoretical Physics. (3).

Special mathematical techniques used in the theoretical treatment of physical phenomena, boundary value problems, matrices, Fourier series and integrals, etc., as applied to advanced physical theory.

6912. Introduction to Theoretical Physics. (3).

Continuation of Physics 6911. **PREREQUISITE:** Physics 6911.

7010. General Physics for High School Teachers. (3).

The course is designed to cover the basic and fundamental concepts of mechanics, heat, and sound. These topics will be covered by lecture, demonstrations, and actual laboratory experiments. The principal objective of the course will be to strengthen the background of science teachers. Credit for this course does not apply toward a major or minor in chemistry or physics.

7020. Fundamental Concepts of Contemporary Physics for High School Teachers. (3).

The course material will include many of the newer topics emphasized in the modern high school texts actually in use today. Electronics, the newer phases and concepts of electricity and magnetism, x-rays, radioactivity, and the basic principles of atomic and nuclear physics will be covered. The principal objective of the course will be to strengthen the background of science teachers. Credit for this course does not apply toward a major or minor in chemistry or physics.

7030. Selected Topics in Modern Physics for High School Teachers. (3).

Some of the more advanced topics of atomic and nuclear physics, together with the basic concepts of solid state physics, electronics, and space technology will be presented. Laboratory

experience with some of the more advanced electronic and nuclear equipment will be provided. A background in basic physics is recommended as a prerequisite.

Three lecture hours per week.

7040. Mathematical Physics. (3).

A survey of mathematical methods employed in advanced physics on the graduate level. Fourier analysis, complex variables, special function, Eigenvalues, tensor analysis, Green's functions and similar topics will be included, with emphasis upon their application to both theoretical and experimental physics courses.

7041. Mathematical Physics. (3).

A continuation of Physics 7040.

7050. Special Topic in Physics. (3-6).

A course designed to include selected topics of interest and importance in advanced Physics. Individual investigation and reports under the guidance of the major adviser will constitute a major part of the course. This course may be taken for a maximum of six semester hours graduate credit.

7060. Fundamental Concepts of Plasma Physics. (3).

This course consists of such topics as phase space and distribution functions, hydrodynamic equations, interaction of electromagnetic waves with plasmas, magnetic and kinetic pressures, the Debye length, collisions and radiation, longitudinal oscillations of plasma elements, diffusion mobility and transport phenomena, the pinch effect, and velocity-space plasma instabilities.

7070. Astronomy for Teachers. (3).

A survey of astronomy intended to strengthen the background of secondary teachers. Topics include observational astronomy, the solar system, stars and stellar evolution, stellar systems, galaxies, cosmology. There will be occasional night observation sessions. This course does not apply toward a major or minor in physics or chemistry.

7100. Classical Mechanics. (3).

An analytical study of mechanics of particles and rigid bodies by Lagrange's, Hamilton's and Hamilton-Jacobi methods. The special theory of relativity, canonical transformation, and Poisson brackets are among the concepts emphasized.

7101. Classical Mechanics. (3).

A continuation of Physics 7100. **PREREQUISITE:** Physics 7100.

7200. Advanced Quantum Mechanics. (3).

Introduction to the concepts and formalism of relativistic quantum mechanics and quantum field theory. A detailed study of the concepts and formalism of Heisenberg formulation, perturbation theories, spin and angular momentum and relativity.

7201. Advanced Quantum Mechanics. (3).

A continuation of Physics 7200. **PREREQUISITE:** Physics 7200.

7300. Electrodynamics. (3).

An advanced course in electricity and magnetism. Topics include fields and potentials, energy methods, steady currents and magnetic materials, Maxwell's equations and electromagnetic waves.

7520. Statistical Mechanics. (3).

Elements of kinetic theory and applications to gases, specific heats, magnetism, etc. Partition functions, introduction to Boltzmann statistics and quantum statistics. Modern theories of statistical data interpretations.

Three lecture hours per week.

7610. Advanced Topics in Solid State Physics. (3).

Introduction to the quantum theory of solids. Band theory, magnetism, superconductivity, lattice dynamics, and other advanced topics.

7710. Advanced Topics in Optical Spectroscopy. (3).

Advanced topics in atomic and molecular spectroscopy, including the interaction of optical radiation with matter, the transition probabilities, hyperfine structure, applications of group theory to spectroscopic problems.

†7996. Thesis. (3 or 6).

The original investigation of an assigned problem in the area of graduate study to be carried out under the supervision of a qualified member of the staff. This investigation will furnish the material for a thesis. Scientific articles, progress reports, and special problems of interest are reviewed and discussed by the student in seminars each semester. A maximum of six semester hours credit is allowed toward a master's degree.

†Grades of S, U, or IP will be given.

PLANNING

PROFESSOR LINZY D. ALBERT, *Chairman*

Room 226, Johnson Hall

The Graduate Department of Planning offers the two-year professional Master of City and Regional Planning degree.

Requirements for the degree are: 17 semester hours in the Core Curriculum, 10 semester hours in the Design Curriculum, 6 semester hours in Thesis Research, 9 semester hours in Concentration, and 18 semester hours in Electives, for a total of 60 hours.

Prerequisite for admittance to the program: An undergraduate minimum grade point average of 2.5 (of 4.0 total) is required for admission to the graduate school. The Department of Planning additionally takes into account a prospect's interest in pursuing a career in planning, his ability to express educational and career objectives; his undergraduate preparation; work experience, scores on the Miller's Analogy and/or Graduate Record Exam; and finally, overall undergraduate grade point average.

Prerequisite for the degree: Satisfactory completion, early in the program, of a course in math statistics or social science statistics, either at the undergraduate or graduate level. The course will be taken only after approval by the Department of Planning faculty. Normally no credit will be given unless special circumstances prevail, such as actual application of statistics to a major planning problem. Other remedial work may be required depending upon a student's education background or job experience.

Prerequisite for non-program students: Non-program students and combination undergraduates are limited to courses titled Planning 7000, 7001, and 7002. For other graduate courses in the department, students may be admitted only upon approval of the instructor and after discussions between the instructor and the student's major professor. Students having received credit for courses listed above and enrolled in the program will satisfy core curriculum requirements by taking additional departmental course work to fulfill the required 60 hours.

Transfer of credit: The Director of the Program may recommend to the Graduate Dean credit for course work successfully completed by a student at other institutions, but not to exceed 12 semester hours. For those students formerly enrolled in graduate planning programs approved by the American Institute of Planners, a maximum of 30 hours, or one full year of graduate work, may be approved.

CORE CURRICULUM

7000. Introduction to Planning. (3).
(Formerly GEOG 6430).

Survey of planning trends in United States and abroad, including land use planning, developmental planning, social planning, transportation planning, community facilities planning, and planning as a governmental activity at the local, state and federal levels.

7001. Historical Development of City Planning. (3). (Formerly GEOG 6434).

A historical survey of the origins and development of urban settlements and cities, and study of the forces that affect urban location, growth and decline.

7002. City Planning Principles. (3). (Formerly GEOG 6432).

The fundamental principles of urban and regional planning with emphasis on land use, the comprehensive physical planning process, major elements of a plan, and planning administration. PREREQUISITE: Planning 7000.

7003. Planning Legislation. (3). (Formerly GEOG 6484).

Historic development of enabling and regulatory legislation which extends the police power to plan implementation, and other pertinent national, state, and local legislation, including the study of both ideal and model legislative acts.

7004. Urban Land Use Controls. (3). (Formerly GEOG 6482).

Study of restrictions on land uses, including codes and ordinances governing zoning, site planning, the subdivision of land, and performance standards.

7005. Planning Practice. (2)

Practical skills in operation of a planning office.

DESIGN CURRICULUM

7006. Field Course. (4). (Formerly GEOG 6485).

Individual and group practice in collection, analysis, and presentation of field data on selected planning problems.

7007. Studio. (4).

Individual and group planning for development of major public and private projects.

***7008. Site Planning I. (2).**

Laboratory course in methods and techniques of land planning.

***Each student required to take Site Planning I or Site Planning II/elective/ for 2 hours credit.**

THESIS

†7996. Thesis. (3-6).

Independent research on thesis or major project satisfactory to the faculty. (Up to six hours credit).

†Grades of S, U, or IP will be given.

AREAS OF CONCENTRATION

An area of concentration to require a total of 9 hours from courses listed below, distributed as follows: 3 hours departmental (Planning), 3 hours non-departmental and 3 hours in either category.

1. Developmental Planning.**7101. Regional Planning. (3). (Formerly GEOG 7702).**

A study of regional planning organization, the various levels of planning, the functions and problems of regional plan implementation.

7103. State Planning. (3). (Formerly GEOG 7701).

Comparative study of planning function in state government.

2. Comprehensive Physical Planning.**7201. Planning Community Facilities. (3). (Formerly GEOG 6483).**

Planning the location and design of community facilities in the light of changing concepts of public service and community organization.

7202. Land Use Planning. (2).

Study of contemporary methods of land use analysis and determination of spatial requirements with emphasis on measuring social and economic costs of land use decisions.

7203. Urban Form and Structure. (2).

Seminar in historical and contemporary concepts of urban structure and analysis of emerging form of urbanization. Each student will prepare a model to illustrate solution for a selected problem.

7204. Urban Renewal. (3). (Formerly GEOG 6433).

Changing urban land uses, first in areas which must improve or rebuild obsolete patterns, functions, and forms; and second in areas with acceptable uses, structures, and institutions, which in the interest and welfare of all the people must have additional space for growth and expansion.

7205. Seminar in Physical Planning. (2).

Conceptual framework for advanced planning for urban and regional areas.

3. Natural and Environmental Resources Planning.**7301. Natural Resource Management Seminar. (3).**

Survey of the evolution of the conservation movement in this country and the programs of state and Federal agencies, including selective case studies in the management of water, timber, wildlife and mineral resources.

7302. Environmental Analysis Seminar. (2).

Analytical and qualitative critique of the physical environment, with emphasis on housing,

renewal, comprehensive plan elements and performance standards.

7303. Legal Aspects of Natural Resource and Environmental Management. (2).

Survey of local, state and Federal legislation regarding the regulation of environmental quality, including air and water quality standards, soil erosion, solid waste management, beautification, historic preservation, and nuisance control.

**ELECTIVES AND RECOMMENDED
COGNATE COURSES**

Each student is required to take 18 hours electives distributed as follows: 9 hours non-departmental and 9 hours at the student's election from the list below, the areas of concentration, or other courses approved by the Department.

7009. Site Planning II. (2).

Advanced laboratory course in methods and techniques of land planning.

7701. Research Problems. (1).

Selected problems in research areas with guidance from teaching staff. (May be repeated for a maximum of 3 hours credit.)

7702. Internship. (2).

Internship or work-study program in an agency or planning firm, including a written report critically describing the student's responsibilities. A full-time summer internship shall count for no more than 4 hours credit. Seminar sessions are held to review progress. (May be repeated for a maximum of 6 hours credit.)

7705. Seminar in Zoning. (2).

Special topics in zoning, research paper preparation and discussion.

7706. Capital Budgeting. (2).

Programming and allocating public funds with special emphasis to the comprehensive planning process.

POLITICAL SCIENCE

PROFESSOR H. PIERRE SECHER, *Chairman*

Room 427, Clement Hall

Graduate students will consult their adviser in the Department of Political Science as to the program of study. The basic requirements areas follows:

MASTER OF ARTS DEGREE

Prerequisites: A minimum of 18 semester hours in Political Science, except in special cases approved by the Chairman of the Department.

Degree Requirements:

- (1) A total of 30 semester graduate courses with a thesis or 36 semester hours in graduate courses without a thesis.
- (2) Satisfactory completion of Political Science 6100, Approaches to the Study of Politics, or its equivalent.
- (3) At least 18 semester hours of the courses must be taken at the 7000 level, twelve of which must be in Political Science.
- (4) Satisfactory performance on a comprehensive examination.
- (5) A minimum of two courses must be taken from three of the following fields: American Government, Public Administration, Political Theory, Comparative Politics and International Relations. Not less than six hours in a collateral area in another behavioral science may be substituted for one of the fields in Political Science with the approval of the Graduate Committee.
- (6) No more than 6 semester hours of internship courses may be counted toward the 30 or 36 semester hour requirement.

MASTER OF PUBLIC ADMINISTRATION DEGREE

Prerequisite: A suitable record of preparation in the social sciences or in business courses. Students with inadequate preparation may be admitted and the deficiencies removed without graduate credit. Those entering the program who have had no public administration courses must take Political Science 3601 or its equivalent.

Degree Requirements:

- (1) A total of at least 36 semester hours in graduate courses.
- (2) Satisfactory completion of the following core curriculum:
 POLS 7601 - Methods of Problem Solving in Public Administration
 POLS 6602 - Public Finance Administration
 POLS 6603 - Public Personnel Administration
 POLS 7600 - Seminar in Administrative Theory.
- (3) Satisfactory completion of Political Science 6101, Techniques of Political Analysis, or an equivalent course.
- (4) Satisfactory completion of POLS 7610, Internship Seminar in Public Administration, unless the student has had appropriate administrative experience.
- (5) At least 18 semester hours of the courses must be taken at the 7000 level, twelve of which must be in Political Science.

- (6) Completion of a concentration of courses in one of the following areas:

General Public Administration
Health Services Administration
Urban Management and Planning
Comparative and Development Administration
Public Policy Analysis/Program Evaluation

- (7) The Master of Public Administration is an interdisciplinary degree and students may take up to 12 semester hours of their work outside of the Department of Political Science with the approval of the adviser.

6100. Approaches to the Study of Politics. (3).

A comprehensive examination of normative and empirical approaches to the study of politics.

6101. Techniques of Political Analysis. (3).

An introduction to the analysis of quantitative data used to test hypotheses in the fields of political science and public administration, including both parametric and non-parametric techniques. Particular attention is given to alternative measures of association and significance, regression, factor analysis, path analysis, and causal modeling.

6102. Political Behavior. (3).

An introduction to the contributions of the behavioral sciences to an understanding of the political system. Political behavior is examined as manifested in the formation of attitudes, public opinion, group organization, and political power.

6103. Political Socialization. (3).

A study of the process whereby political attitudes and values are passed from one generation to the next and altered in transmission. Includes the quantitative measurement of political attitudes.

6211. Constitutional Law-National Powers. (3).

An analysis of the relationships and controls of the three branches and the nature of the division of power between the nation and the states, with emphasis on the role of the Supreme Court as the arbiter in the constitutional system.

6212. Constitutional Law-Civil Liberties. (3).

An examination of the judicial interpretation of political and civil rights with emphasis on the period since 1945.

6213. Public Policy. (3).

The analysis of selected public policy issues and the interplay of organization and politics in the policy making process.

6214. The Executive Process. (3).

A detailed study of the role of the executive in American politics.

6215. The Judicial Process. (3).

An examination of the structure of the legal system and the role of the judiciary in govern-

ment and politics. Emphasis is on the American legal system and the factors which enter into judicial decision-making including political, social, economic, and psychological factors.

6216. Public Opinion and Interest Groups. (3).

A study of the formulation of political attitudes and opinions. Special emphasis is placed upon the role played by interest groups in the formulation of public opinion. Includes an analysis of selected groups and their tactics.

6217. The Legislative Process. (3).

The origins, organization, functions, and activities of the modern legislature; making laws, supervising the administration, representing and informing the people.

6221. Urban Administration. (3).

Examination of politics, administration, and public policy in an urban context; focus on the administrative aspects of selected governmental policy-making processes; interrelationships of governments at various levels; urban challenges facing modern public administration.

6230. Legislative Internship. (3-12).

Supervised internship working with the Tennessee General Assembly or other legislative bodies on current legislative programs. Seminar sessions are held to discuss and analyze the problems with which the interns are working. May be repeated for a total of 12 credits. PREREQUISITE: Permission of the department.

6302. The Problems of Developing Countries. (3).

An introduction to the comparative study of the problems of political modernization in the developing countries.

6305. Soviet Government and Politics. (3).

Organization and function of the authoritarian state, with emphasis on the role of the Communist Party and ideology.

6306. Contemporary Latin American Politics. (3).

A study of contemporary problems in Latin American politics and inter-American relations.

6307. Government and Politics of Communist China. (3).

A study of the institutions of government, the political process, political elites, political groups and political socialization of Communist China.

6309. Comparative Political Parties. (3).

A comparative study of political parties and party systems in selected countries.

6311. Comparative Political Elites. (3).

A comparative study of political elites in selected political systems.

6399. Research and Studies Abroad. (1-6).

Supervised field research and studies in selected foreign countries. May be repeated up to 6 hours.

6401. Modern Political Ideologies. (3).

A study of authoritarianism and democracy as represented by a comparison of democracy socialism, communism, and fascism.

6403. Contemporary Protest Thought. (3).

Political theories of black protest, the new left and the far right.

6405. American Political Thought. (3).

An analysis of political thought in the United States from the colonial to the present time, with emphasis placed on the relation between political thought and political institutions and practices.

6407. Black Political Thought. (3).

An analytical survey of black political thought from the colonial period to the present. Emphasis is placed upon recent and contemporary thought.

6501. Contemporary Problems in International Politics. (3).

A study of contemporary problems in international relations with emphasis on the major powers.

6502. Soviet Foreign Policy. (3).

Basic concepts about Soviet foreign policy; development and techniques; present patterns of Soviet relations with key nations; major problems in future relationships.

6503. Inter-American Relations. (3).

Study of diplomatic relations among the nations of Latin America and with the United States. Regional organizations and relations with Cuba are given special attention.

6504. International Law. (3).

An analysis of the nature, scope, duties, rights, and evolutionary trends of international law.

6505. Comparative Communist Systems. (3).

A cross-national comparison of the adaptation of ruling and non-ruling communist parties to different political environments. Includes examination of inter-party and the intra-block relations.

6506. Problems in American Foreign Policy. (3).

A study of American foreign policy problems taken from specific areas or issues of policy.

6507. Problems of European Politics. (3).

A study of selected political problems of European states.

6508. Theories and Concepts in International Politics. (3).

A survey of theoretical approaches to the study of international politics. Special attention is given to methodology models, and international political simulation.

6602. Public Finance Administration. (3).

Detailed study of administrative and political problems of fiscal policy, the budgetary process, and fiscal controls.

6603. Public Personnel Administration. (3).

The study of policies, methods, and techniques utilized in public personnel administration. Special attention is given to problems reflecting contemporary demands upon personnel organizations. The capacity to analyze problems, select the most effective means of dealing with them and plan appropriate courses of action is developed through case example.

6604. Problems of Public Administration. (3).

An investigation of selected problems in the administration of public functions, with emphasis upon contemporary developments.

6611. Administrative Law. (3).

Study of the role and nature of administrative law, including procedural requirements and judicial review of administrative actions and the liability of the government for torts and breach of contract.

6705. Special Topics in Public Issues. (1-3).

A study of selected topics of current significance in public issues. May be repeated for a maximum of 6 hours credit.

7101. Empirical Political Theory. (3).

An in-depth study of the philosophy of science, theory-building, and the various general as well as middle-range theories in political science including system theory, structural-functioning theory, communication theory, decision-making theory, game theory, and mathematical modeling in political science.

7201. Seminar in U.S. Political Institutions. (3).

A study of the development of major political institutions in the United States.

7212. Seminar in Constitutional Problems. (3).

Study of selected problems in contemporary constitutional law.

7213. Seminar in Public Policy Analysis. (3).

A seminar dealing with the empirical and normative analysis of public policy at the local, state, national, and international levels. Emphasized are the theories, literature, and methodologies current to this field. PREREQUISITE: POLS 6101 or equivalent.

7216. Seminar in Political Behavior. (3).

An examination of the theories, methods, and the findings of the behavioral approach in political science.

7224. Seminar in Urban Problems. (3).

A consideration of the problems inherent in the growing urban developments in the United

States. The governmental organization of metropolitan areas and the difficulties of coordination of government functions. Proposed remedies and the reception of new approaches in selected metropolitan areas.

7225. Seminar in Problems in State Government. (3).

Selected policy making processes and policy problems arising from the operation of legislative, administrative, and judicial machinery. Special attention will be given to Tennessee.

7301. Seminar in Comparative Political Institutions. (3).

Comparative study of the development of political institutions in a variety of foreign governments.

7302. Seminar in Comparative Politics. (3).

Study of selected problems in comparative politics.

7303. Seminar in Political Development. (3).

A comparative study of the process of political change in traditional developing nations.

7401. Seminar in Selected Topics in Political Theory. (3).

Study of selected topics involving the development of political thought. May be repeated for a maximum of 6 hours credit.

7501. Seminar in International Politics. (3).

A study of selected problems in international politics.

7502. Seminar in National Security Policy. (3).

An examination of the defense policy of the United States and selected foreign powers. The national security process, strategic theory and doctrine, and civil-military relations are treated.

7600. Seminar in Administrative Theory. (3).

A seminar focusing upon the significance of public administration in American government. Includes an introduction to formal organization theory and bureaucracy, decision-making theory, leadership and motivational theory, and current trends and problems in the study of public administration.

7601. Methods of Problem Solving in Public Administration. (3).

An introduction to models, theories, and techniques of problem solving in public administration, including the application of systems theory, structural-function analysis, rational and incremental decision theories, models of public policy analysis, group theory, elite theory, and simulation. PREREQUISITE: Political Science 4101 or Political Science 6101 or permission of the instructor.

7605. Seminar in Politics and Administration. (3).

Explanation of problems stemming from the

relationships of politics and administration, stressing relevant analytical approaches and research methods.

7608. Comparative Public Administration. (3).

Seminar on the comparative ecology of administration in selected countries. Analysis of similarities and differences in administrative structures and functions in developed and developing nations; practicalities of cross-cultural transferability of administrative concepts and processes.

7610. Internship Seminar in Public Administration. (3-6).

Supervised internship working with cooperating government agencies and with the Institute of Governmental Studies and Research on current problems of public administration. Seminar sessions are held to discuss and analyze the problems with which the interns are working. PREREQUISITE: Permission of the department.

7615. Special Problems. (3).

May be repeated for a total of six credits. Independent investigation of a research problem or directed readings in a selected area of political science. PREREQUISITE: Permission of instructor.

7621. Health Care Administration I. (3).

Analysis of health and medical care systems with reference to public, private and voluntary agencies at local, state, regional, and national levels; emphasis on political forces and administrative roles, relationships, issues and trends. (Designed to orient the administrator to health and medical care systems with which he may work).

7622. Health Care Administration II. (3).

Administrative characteristics of hospitals and health care agencies; management problems of program development; construction of programs; staffing; budgeting and financial management; performance standards; interagency coordination.

7623. Health Care Administration III. (3).

Analysis of health and medical care data methods and systems with reference to collection, processing and utilization of primary and secondary sources of data; utilization of data by the administrator to include the following elements: formulation of objectives, questionnaire design, and data collection techniques as they relate to the medical care decision making process; modern data storage and retrieval concepts will be discussed with special attention given to medical care statistics (morbidity/mortality data), in a multiphasic health screening environment.

7624. Health Care Administration IV. (3).

An examination of administrative practice as it relates to the planning process in health care delivery; historical review of the development of

planning concepts and planning agencies; analysis of the effects of forces both internal and external to the organization; review of techniques and methods used in partial and comprehensive planning and the development of a heuristic planning model.

†7996. Thesis. (3-6).

The student must write and defend satisfactorily a thesis on a subject approved by his major professor.

†Grades of S, U, or IP will be given.

PSYCHOLOGY

PROFESSOR ROBERT VIDULICH, *Chairman*

Room 202, Psychology Building

The graduate major in psychology may specialize at the Master's level in General Psychology or Clinical Psychology. At the doctoral level, specializations are available in Clinical Psychology, Experimental Psychology (with sub-specialties in Biopsychology, Learning-Behavior Analysis, and Sensory Processes), or in Human Psychology (with sub-specialties in Human Development, Industrial Psychology, and Social Psychology). Additional inter-area sub-specialties are offered in Neuropsychology, and in Behavior Management.

In the Department of Psychology, permission to pursue a Master's degree is granted on a competitive basis. In order to be considered for master's work, the applicant should meet the following prerequisites:

1. An overall undergraduate grade-point average of at least 2.5 (out of 4.0). Applicants with undergraduate records at this minimum level are not ordinarily admitted. Strong supporting evidence will be required of such applicants.
2. A minimum of 18 semester hours in undergraduate psychology courses, including Quantitative Methods and Experimental Psychology. A student lacking these prerequisite courses but presenting an exceptional undergraduate record may be granted graduate admission and should remove the deficiencies as early as possible. In other cases, an applicant may be admitted as a special student, his application for graduate status being deferred until the deficiencies are removed.
3. Satisfactory performance on the aptitude section of the Graduate Record Examination.
4. Letters of recommendation from at least two persons familiar with the applicant's background and aptitude for graduate work.

In the Department of Psychology, permission to pursue the Ph.D. degree is also selectively granted on a competitive basis. In order to be considered for advanced graduate work in the Ph.D. program, the applicant must meet the following requirements:

1. Have satisfactorily completed all requirements for the Master of Science degree in Psychology at Memphis State University, or hold an equivalent master's degree from another institution. No applicant will be considered for the Ph.D. program who holds a non-thesis degree until he has completed, at Memphis State University, the

additional requirements of this Department for the M.S. degree. Outstanding prior work in graduate studies will be expected of all applicants.

2. Satisfactory performance on the aptitude section of the Graduate Record Examination.
3. Letters of recommendation from at least three persons familiar with the applicant's academic background and aptitude for advanced graduate work.

The student granted graduate status should consult his graduate faculty advisory committee to determine his program of study. The student may work toward the M.A. Degree or the M.S. Degree in Psychology, the choice of degree programs depending on the student's interests and goals. The student pursuing the M.A. or M.S. Degree in Psychology is urged to complete all his work for the degree in the Department of Psychology, though under special circumstances he may take a collateral in an area approved by his advisory committee.

7000- Issues In General Psychology I. (3).

8000. Required of all doctoral degree candidates. A seminar discussion of the basic issues in contemporary psychology within their historical context, with extensive examination of their implications for theoretical and professional applications.

7001- Issues In General Psychology II. (3).

8001. Required of all doctoral degree candidates. A seminar discussion of the basic issues in contemporary psychology within their historical context, with extensive examination of their implications for theoretical and professional applications.

7101- History and Systems of Psychology. (3).

8101. An analysis of the philosophical and scientific antecedents of contemporary psychology, including examination of historically and currently important theoretical systems and discussion of problems of conceptualization and theory construction.

7102- Physiological Psychology. (3).

8102. A comprehensive study of the relationships between physiological processes and behavior. The anatomy and physiology of the nervous

system will be reviewed. Major emphasis is on various functional systems such as attention, activation, regulation, and on the topics of learning and memory.

7103- Comparative Psychology. (3).

8103. A comprehensive examination and synthesis of the principles, concepts, and findings of ethology and comparative psychology. Similarities and differences in theories, methods, and research findings related to such basic psychological problems as the effective stimulus, the drive concept, and acquired vs. innate behaviors will be examined.

7104- Psychological Appraisal. (3).

8104. A survey of the empirical foundations of psychological assessment. Research on the interpretation and evaluation of a variety of measurement devices will be reviewed. The role of assessment in the modification of behavior will be discussed.

7201- Theories of Learning. (3).

8201. Examination and discussion of the major contemporary theories of learning. Attention is given to the basic assumptions, logical structure, and empirical support for the theories of Spence, Skinner, Estes, and Logan. In addition, briefer consideration is given to theories of considerable historical importance such as those of Guthrie, Tolman, and Hull.

7202- Theories of Personality. (3).

8202. A survey of major contemporary theories of personality, with particular emphasis on the etiology and treatment of psychopathological states as interpreted within various theoretical frameworks.

7203- Behavior Analysis. (3).

8203. A comprehensive treatment of behavioral principles in their application to simple and complex forms of behavior. The course focuses on operant conditioning of animal behavior and demonstrates the basic behavioral principles at work in their simplest form. These operant conditioning principles are extended to human behavior occurring in the natural environment. Increasingly complex human behaviors are successively introduced.

7204- Motivation. (3).

8204. A survey of the theoretical and research literature pertaining to the topic of motivation. Consideration of the concepts of instinct, drive and motive, with coverage of both animal and human studies.

7205- Social Psychology. (3).

8205. A survey of the theoretical and research literature pertaining to current topics in social psychology excluding intra- or inter-group behavior, including attitude formation and change, inter-personal perception and behavior, social motivation, communication and persuasion, and social influence and conformity.

7206- Group Processes. (3).

8206. Social psychology of groups and organizations

including social influence, leadership, and inter- or intra- group behavior.

7207- Developmental Psychology. (3).

8207. A detailed examination of developmental processes across species. Primary emphasis is placed on the variables contributing to normal development of species-characteristic abilities and patterns of behavior.

7208- Psychology of Perception. (3).

8208. An examination of the historical development, research, and major theoretical positions in the area of perceptual psychology. Major emphasis is placed on theoretical and experimental treatment of the basic perceptual phenomena.

7209- Sensory Psychology. (3).

8209. A structural and functional examination of the basic sensory systems. The problems of sensory quality and sensory quantity will be investigated with major emphasis on visual acuity, color vision, pitch discrimination, and haptic sensitivity.

7210- Psychology of Learning. (3)

8210. Examination and discussion of current research, and of theoretical and experimental problems in the area of learning and behavior modification. Topics covered include reinforcement, extinction, motivation, generalization, discrimination, retention, and forgetting.

7211- Cognitive Processes. (3).

8211. Analyses of thinking, conceptualization, language and symbolic activity, and related mediational processes in the individual.

7212- Industrial Psychology. (3).

8212. The application of psychological principles and findings to industrial settings analyzing personnel selection, classification and evaluation, employee attitudes, morale and motivation, and psychological factors in work.

7213- Theoretical and Empirical Problems in

8213. Psychology. (3).

A detailed survey of the philosophical and logical antecedents and problems in psychology as a science, covering such topics as empirical methods in psychology, psychological data language, theory construction, probability and inference, and inductive procedures.

7214- Human Factors Psychology. (3).

8214. The course deals with the contribution of psychological research to the design of equipment for efficient human use and operation. Studies of the characteristics and limitations of the human individual which bear upon the equipment best suited to his use. A survey of research on visual and auditory displays, controls, layouts, complex man-machine systems and vigilance.

7215- Organizational Psychology. (3).

8215. The course deals with the major organizational determinants of individual and group behavior and performance. The characteristics of organization structure and climate are explored

from both a classical and a contemporary viewpoint. Organization change and development theories are examined plus the major ancillary theoretical positions on leadership, individual and group performance, behavior modification, selection and training.

7216- Behavior Management. (3).

8216. Application of the principles of operant-instrumental learning to human behavior in various settings such as educational, rehabilitative and institutional programs. Practical implementation of the principles of behavior analysis and management will be stressed and expected of the student. **PREREQUISITES:** Psychology 7203 or equivalent.

7301- Research Design and Methodology. (3).

8301. The emphasis will be on mathematical and non-mathematical analyses of psychological data, theoretical and experimental implications of different analyses, various data collection techniques, and types of experimental and statistical control.

7302- Quantitative Methods. (3).

8302. Statistical inference applied to problems in psychological experimentation. Elementary probability, statistical distribution, classical and nonparametric statistics will be covered.

7303- Multivariate Analysis. (3).

8303. Partial and multiple correlation, factor analysis, cluster analysis. Practice in applying these techniques, with emphasis on the logic of such statistical techniques for psychology.

7304- Measurement Theory and Psychometrics. (3).

8304. Measurement theory involved in the construction and evaluation of psychological measuring instruments will be stressed. Particular emphasis will be placed on scaling methods and their use in psychological research and evaluation.

7305- Research and Data Collection Methods in

8305. Human Psychology. (3).

An intensive examination and analysis of methods, techniques and procedures used in the study of human behavior, including interviewing, questionnaires, sociometry, naturalistic observation, and attitude and behavior scaling.

7308- Behavioral Instrumentation. (3).

8308. Detailed examination of instrumentation techniques in behavioral psychology including specific study of basic electronics appropriate to psychological equipment circuit construction, programming, and stimulus presentation techniques, and to the design and construction of behavioral research equipment.

Two lecture, two laboratory hours per week.

7309- Physiological Techniques. (3).

8309. Detailed examination of various techniques used in research in physiological psychology, covering such topics as surgical and histological procedures, cortical lesions and implants, perfusion, and electrophysiological recording.

Two lecture, two laboratory hours per week.

7310- Programmed Instruction. (3).

8310. The application of principles of reinforcement contingencies to self-instruction devices. Historical development, research findings, programming, and evaluation will be covered.

7401- Theories of Psychotherapy. (3).

8401. A comparative examination of the principles and techniques of psychotherapy associated with major theorists in this area. Relevant clinical and experimental research will be surveyed to emphasize the similarities and differences between various approaches.

7404- Individual Psychological Assessment. (4).

8404. An examination of various psychological techniques for assessing human intellectual, personality, behavioral, and social functioning using both objective and projective tests and other measures. Practicum experiences in simulated and real settings will be emphasized in conjunction with classwork. **PREREQUISITE:** Psychology 7104-8104 or equivalent.

7412- Psychopathology. (3).

8412. A survey of the manifestations of abnormal behavior and psychological processes. Detailed analysis of the clinical and experimental literature concerning psychological and psychiatric disorders and their etiology.

7413- Introduction to Mental Retardation. (3).

8413. A comprehensive introduction to the psychological, genetic, physiological and social aspects of mental subnormality. Consideration of classification systems, syndromes, etiology and prognosis of mental retardation in children and adults.

†7415-Sensitivity Training. (3).

8415. This course is required for all advanced clinical psychology majors and is a prerequisite to the Clinical Practicum in Psychological Treatment, Psychology 7612. The course is designed to enhance self-awareness and clinical sensitivity through involvement as a participant observer in the development and continuing functioning of a small group. Emphasis will be on emergent styles of interaction in roles, both explicit and implicit, inherent in the group structure. *Only pass-fail grades will be given, and the credit is not applicable to any degree in psychology.*

7431- Clinical Practice. (4).

8431. This first course for graduate students admitted to the training program in Clinical Psychology introduces them to some major conventions, methods, nomenclature, and role definitions and responsibilities of professional psychology, with practicum experience. **PREREQUISITE:** Admission to the graduate training program in Clinical Psychology.

7432- Clinical Assessment. (4).

8432. Continuing from the exposure to individual testing during the first graduate clinical course, this provides a survey of objective tests and free-response diagnostic techniques, including intellectual and personality measures and their administration, with practicum experiences.

PREREQUISITE: Admission to the graduate training program in Clinical Psychology.

433- Clinical Psychopathology and Social

433. Deviance. (3).

Detailed critical examination of the forms and variations of abnormal behavior; their historical origins and current status with case illustrations; theoretical explanations of specific syndromes with comparison of alternative views of causation; social determinants and boundary conditions; current research evidence and representative problems in the application of concepts of deviancy; guidelines for decision-making; relativism of alternative standpoints. **PREREQUISITE:** Admission to the graduate training program in Clinical Psychology.

7434- Clinical Psychotherapies. (4).

8434. A critical theoretical and tactical survey, with practicum, of a range of treatment approaches emphasizing the verbal and relationship psychotherapies. Examination of explanatory assumptions, intervention strategies and methods, spheres of applicability, representative outcome consequences for particular client populations, and implications for transsituational management of clinical clients. **PREREQUISITE:** Admission to the graduate training program in Clinical Psychology.

7435- Clinical Behavioral Assessment. (4).

8435. A survey, with practicum, of direct measurement techniques for individual and multiple clients, oriented to treatment and program planning. This includes methods for quantifying stimuli, and data-gathering options for diverse response classes of individual and social interaction and performance. **PREREQUISITE:** Admission to the graduate training program in clinical psychology.

7436- Clinical Behavior Therapies. (4).

8436. A critical theoretical and tactical survey, with practicum, of a range of behavioral treatment approaches. Examination of explanatory assumptions, intervention strategies and methods, spheres of applicability, representative outcome consequences for particular client populations, and implications for the construction of broad-spectrum intervention programs. **PREREQUISITE:** Admission to the graduate training program in Clinical Psychology.

7437- Clinical Special Topics. (3).

8437. Provides advanced conceptual discussion and supervised skill training in a variety of techniques not routinely covered in detail previously, thus amplifying in depth such clinical procedures as neuropsychological group therapy, implosive techniques, aversion methods, systematic desensitization, the design and execution of broad-spectrum composite change programs, "inpatient management", and therapeutic community approaches. (This may be repeated for a total of 9 credits.) **PREREQUISITE:** Admission to the graduate training program in Clinical Psychology.

7501- Seminar: General Psychology. (3).

8501. (May be repeated for a maximum of 9 credits.) Systematic study of current topics in psychology of general-theoretical nature.

7502- Seminar: Physiological Psychology. (3).

8502. (May be repeated for a maximum of 9 credits.) Systematic study of current topics in the field of physiological psychology.

7503- Seminar: Experimental Psychology. (3).

8503. (May be repeated for a maximum of 9 credits.) Systematic study of current topics in the field of experimental psychology.

7504- Seminar: Comparative Psychology. (3).

8504. (May be repeated for a maximum of 9 credits.) Systematic study of current topics in the field of comparative psychology.

7505- Seminar: Social Psychology. (3).

8505. (May be repeated for a maximum of 9 credits.) Systematic study of current topics in the field of social psychology.

7506- Seminar: Clinical Psychology. (3).

8506. (May be repeated for a maximum of 9 credits.) Systematic study of current topics in the field of clinical psychology.

7507- Seminar: Industrial Psychology. (3).

8507. (May be repeated for a maximum of 9 credits.) Systematic study of current topics in the field of industrial psychology.

7508- Seminar: Mental Retardation (3).

8508. (May be repeated for a maximum of 9 credits.) Systematic study of current topics in the field of mental retardation.

7509- Seminar: School Psychology. (3).

8509. (May be repeated for a maximum of 9 credits.) Systematic study of current topics in the field of school psychology.

7510- Seminar: Organizational Psychology. (3).

8510. (May be repeated for a maximum of 9 credits.) Systematic study of current topics in the field of organizational behavior.

7511- Seminar: Personality Psychology. (3).

8511. (May be repeated for a maximum of 9 credits.) Systematic study of current topics in personality theory and research.

7512- Seminar: Developmental Psychology. (3).

8512. (May be repeated for a maximum of 9 credits.) Systematic study of current topics in the field of developmental psychology.

7513- Seminar: Neuropsychology. (3).

8513. (May be repeated for a maximum of 9 credits.) Systematic study of current topics in the field of neuropsychology.

†7601-Research Practicum: General Psychology.

8601. (1-3).

(May be repeated for a maximum of 9 credits.) Individualized advanced laboratory or field research activities in general psychology.

†7602-Research Practicum: Physiological Psychology. (1-3).

(May be repeated for a maximum of 9 credits). Individualized advanced laboratory research activities in physiological psychology.

†7603-Research Practicum: Experimental Psychology. (1-3).

(May be repeated for a maximum of 9 credits). Individualized advanced laboratory or field research in experimental psychology.

†7604-Research Practicum: Comparative Psychology. (1-3).

(May be repeated for a maximum of 9 credits). Individualized advanced laboratory or field research activities in comparative psychology.

†7605-Research Practicum: Social Psychology. (1-3).

(May be repeated for a maximum of 9 credits). Individualized advanced laboratory or field research activities in social psychology.

†7606-Research Practicum: Clinical Psychology. (1-3).

(May be repeated for a maximum of 9 credits). Individualized advanced laboratory or field research activities in clinical psychology.

7607-Research Practicum: Developmental Psychology. (1-3).

(May be repeated for a maximum of 9 credits). Individualized advanced laboratory or field research activities in developmental psychology.

7608-Research Practicum: Neuropsychology. (1-3).

(May be repeated for a maximum of 9 credits). Individualized advanced laboratory or field research activities in neuropsychology.

†7610-Field Practicum: Clinical Psychology. (1-3).

8610. (May be repeated for a total of 12 credits). Supervised experience in the use of psychological diagnostic, treatment, or community intervention procedures in various community agencies and facilities. PREREQUISITE: Admission to the graduate training program in Clinical Psychology, or consent of instructor.

†7611-Field Practicum: Social-Industrial Psychology. (1-3).

(May be repeated for a maximum of 9 credits).

Seminar discussion and supervised experience in the application of basic psychological procedures and principles to social, personnel and organizational activities in various industrial, military and community settings. PREREQUISITE: Admission to graduate training program in industrial-organizational psychology or consent of the instructor.

†7614-Practicum: School Psychology. (1-9).

8614. (May be repeated for a maximum of 9 credits). Supervised experience in the use of psychological procedures in educational settings. PREREQUISITE: Admission to graduate training program in school psychology or consent of instructor.

7615-Special Problems. (1-3).

8615. (May be repeated for a total of 6 credits). Independent investigation of a research problem or directed readings, in a selected area of psychology chosen in consultation with the instructor. PREREQUISITE: Consent of instructor.

†7616-Clinical Practicum: Neuro-Psychology. (3).

8616. (May be repeated for a maximum of 9 credits). The advanced student interested in neuropsychology will receive supervised experience in the use of psychodiagnostic techniques in various community settings. This training will cover the basic diagnostic techniques, specialized diagnostic techniques, and neurological assessment procedures. PREREQUISITE: Consent of instructor.

†7996.Thesis. (3).

Independent research for Master's degree. Application for writing a thesis must be filled out on an approved form after consultation with major professor and filed with the Dean of The Graduate School.

†9000.Dissertation. (3-9).

Independent research for Doctor of Philosophy degree. Application for writing a dissertation must be filled out on an approved form after consultation with the major professor and filed with the Dean of The Graduate School.

†Grades of S, U, or IP will be given.

SOCIOLOGY

PROFESSOR JERRY MICHEL, *Chairman*

Room 231 Clement Hall

Graduate students who select sociology as a major area will consult with the Coordinator of Graduate Studies in the Department as to their program of study. Applicants for admission to the program must meet the admission standards of the Graduate School and have at least fifteen (15) hours of undergraduate work in sociology. Once admitted to the program, students may choose one of two alternative degree programs available within the

Department: (A) the thesis program which requires thirty (30) semester hours of graduate level work, with 3-6 hours of Sociology 7996 (thesis); (B) the non-thesis program which requires thirty-three (33) semester hours of graduate work and successfully passing both written and oral comprehensive examinations. The following courses are required of all majors: Sociology 7110, 7210, 7320, and 6312. At least twenty-four (24)

semester hours of the student's course work must be within the Department of Sociology. It is the responsibility of each student to obtain a copy of "Degree Requirements for Master of Arts in Sociology" from the Graduate Coordinator or the Departmental office. This document will answer most of the student's questions concerning the program and give direction to the student planning his degree program.

SOCIOLOGY

211. Modern Sociological Theories. (3).

European contributions, American developments, recent trends and influences in sociological theory.

222. History of Social Thought. (3).

Emphasis on the historic sources of social ideas in Western culture in terms of their relevance to contemporary systematic theory.

312. Intermediate Social Statistics. (3).

Inductive statistical methods and tests of significance for multivariate analysis of social data. Advanced study of sampling in survey research, and of hypothesis testing. Data reorganization for precision of analysis. Use of packaged statistical programs and FORTRAN programming as required for data modification and analysis in social statistics. PREREQUISITES: Sociology 3311, 3322; or their equivalent, or permission of the instructor.

442. Sociology of Poverty. (3).

Sociological and social psychological perspectives on poverty. Various explanations of the personality, cognitive, and behavioral correlates of poverty.

522. Juvenile Delinquency. (3).

Trends of juvenile delinquency; the development of case study techniques and diagnosis of juvenile delinquency; comparative analysis of various theoretical approaches.

720. Collective Behavior. (3).

Emergence of collective behavior, spontaneous collectivities, social movements, social consequences of restrictive collective behavior.

730. Attitude Theory and Measurement. (3).

Basic properties of attitudes; theories of attitude formation and change attitude-behavior discrepancies. Assumptions and techniques of attitude measurement, including scaling. PREREQUISITES: Sociology 3311, 3322.

842. Sociology of Occupations and Professions. (3).

Sociological analysis of the division of labor, occupational groupings, career patterns, and professional associations in modern American society.

6851. Medical Sociology. (3).

A sociological analysis of the definition and distribution of physical illness and society's response to its occurrence, focusing on the roles of patient, physician and ancillary professionals within contemporary medical settings, particularly the modern hospital.

6852. Sociology of Mental Illness. (3).

Sociological analysis of the definition and distribution of mental illness and society's response to its occurrence, focusing on the social organizational provision for the professional and patient roles within contemporary therapeutic settings.

6912. Directed Individual Study. (1-4).

Individually directed advanced reading and/or research in special areas of interest. Note: Course may be repeated for a maximum of 6 hours credit (for students who have received credit for Sociology 6830, the maximum credit allowed for Sociology 6830 and 6912 is 6 hours). PREREQUISITE: Permission of Coordinator of Graduate Studies.

7110. Proseminar. (3).

Review and integration of major propositions, concepts, and methods from the various fields of sociology in their current state.

7120. Seminar in General Sociology. (3).

A seminar designed to provide students who are non-majors with an overview of the discipline. Acquaints the students with the sociological viewpoint in the analysis of social issues. (Will not apply toward a M.A. in Sociology). Note: Students who received credit for 7111 will not be able to receive credit for 7120.

7210. Theory Seminar. (3).

An advanced analysis of recent developments in sociological theory, including the relationship of theory to empirical research.

7230. Systems Theory Seminar. (3).

The advanced analysis of specialized sociological systems as developed by American and European sociologists.

7240. Sociology of Knowledge. (3).

Systems of thought, including metaphysical theories and social and political philosophies are studied from the standpoint of their causal interdependence with social structures and processes. Note: Students who received credit for 7880 will not be able to receive credit for 7240.

7320. Seminar in Methods of Social Research. (3).

A seminar applying student's advanced knowledge of social statistics and the general methodology of social research. Additional consideration of data reduction and data modification, using packaged statistical com-

puter programs. Emphasis on interpretation of research data, and on preparing the research report.

7330. Seminar in Current Research Literature. (3).

A seminar dealing with current topics of interest in the field. Topics will vary in response to the interests of the students and specialties of the staff. (May be taken twice for three hours credit each time when topic varies.)

7411. Social Stratification. (3).

This course will examine the theories of Marx, Weber, Warner, Parsons, and Bendix among others. Furthermore, this course will encompass the study of the relationship between class, prestige, life-style and ideology in cross cultural perspective. Finally, it will also examine the factors relating to the increase and decrease in rates of social mobility. Note: Students who received credit for 7440 will not be able to receive credit for 7411.

7421. Racial and Cultural Minorities. (3).

A study of the empirical and conceptual aspects of minority status as determined by racial and cultural criteria. Note: Students who received credit for 7810 will not be able to receive credit for 7421.

7511. Seminar in Deviant Behavior. (3).

A seminar in the sociological approaches to the study of deviance and social disorganization with an emphasis on current sociological theory and research.

7522. Seminar in Delinquent Behavior. (3).

An analysis of the interplay between collective rule making, organizational processing and interpersonal relations as manifested in juvenile delinquency. Specific focus will be placed on the empirical and conceptual developments and problems associated with the process of becoming delinquent. Alternative responses to juvenile misconduct will also be examined and evaluated. PREREQUISITE: Sociology 4522-6522 or permission of instructor.

7611. Population Seminar. (3).

Population theories and policies; their definition and history. Trends in population growth; methods of population analysis, and trends in fertility and morality. Emphasis on fertility, morality, sex and age composition, and migration and their influences on population change. Note: Students who have received credit for Sociology 6610 will not be allowed credit for Sociology 7611.

7612. Techniques of Population Analysis. (3).

An analysis of the sources of population data and the techniques for utilizing these data in population research and in other forms of social research in which population data are a meaningful part. Note: Students who received credit for 7610 will not be able to receive credit for 7612.

7631. Urban Theory Seminar. (3).

A seminar in sociological theories of urban and urbanization. Analysis of both historical and contemporary theories. Note: Students who received credit for 7413 will not be able to receive credit for 7631.

7632. Urban Problems and Research. (3).

This course will study some selected urban problems and the development of social research techniques for their solution. Actual field research in the Memphis Metropolitan Area will be conducted. Note: Students who received credit for 7412 will not be able to receive credit for 7632.

7721. Seminar in Collective Behavior. (3).

Emergence of collective behavior, spontaneous collectivities, social movements, social consequences of restrictive collective behavior. Note: Students who receive credit for Sociology 6710 will not be allowed credit for Sociology 7721.

7751. Social Structure and Personality. (3).

Research and theory relating social structure variables to processes of socialization, personality development, and conceptions of role and self. Note: Students who received credit for 7712 will not be able to receive credit for 7751.

7772. Seminar in Role Theory. (3).

Investigation and analysis of the fundamental problems in conceptual and empirical definitions of roles. Emphasis will be placed on the development of roles and role correlates and the processes of role maintenance and change. Note: Students who received credit for 7713 will not be able to receive credit for 7772.

7811. Formal Organizations. (3).

The relationship between organizational structure, ideology, and interaction patterns. Note: Students who received credit for 7460 will not be able to receive credit for 7811.

7830. Seminar in the Family. (3).

An advanced course in the study of the family which is primarily concerned with research findings in the area of family disorganization, changes in family structure and function, parent-child interaction, working mothers, and problems of aging. Note: Students who received credit for 7420 will not be able to receive credit for 7830.

7860. Seminar in the Sociology of Religion. (3).

A sociological examination of religious institutions; cultural and social factors associated with religious structure, religious values, religious behavior; secularization of culture and change of social structure; analysis of religious organizations, the religious leadership and religious movements.

140. Seminar in Comparative Social Institutions. (3).

Systematic comparisons of changing institutional structures of various modernizing or highly planned societies. The evolving and variable features of the major institutions - religious, familial, political, economic and occupational - as they appear in different societies. Emphasis on testing the adequacy of theories of

social change through cross-societal analysis. Note: Students who received credit for 7400 will not be able to receive credit for 7940.

†7996.Thesis. (3-6).

Supervised research in preparation for advanced degree thesis. PREREQUISITE: The formal filing of a research proposal and outline of procedures acceptable to the student's graduate committee.

SPECIAL EDUCATION AND REHABILITATION

PROFESSOR WILSON L. DIETRICH, *Chairman*

Room 101A, Special Education Building

The Department of Special Education and Rehabilitation offers the degree Master of Education with concentrations in various areas listed. The Education Specialist degree and Doctor of Education may be considered only after conference with the Departmental chairman or his representative. For completion of the master's degree program, a student must satisfactorily complete an oral and written comprehensive examination or an oral examination and thesis.

Students may study in one or more areas of Special Education and Rehabilitation within the degree requirements. A typical program consists of a minimum of 3 to 39 semester hours of graduate credit

General Requirements for All Students Pursuing Master of Education Programs

1. College of Education Requirement
EDRS 7521 - Introduction to Educational Research
3 semester hrs.
2. Collateral Area Electives (Outside College of Education) To be determined with the student's advisor 9 semester hrs.

Master of Education in Special Education and Rehabilitation

Concentration Available 18-27 semester hrs.

1. Educationally Handicapping Conditions*
2. Multihandicapped
3. Pre-school Education of Exceptional Children
4. Vocational Rehabilitation

Master of Education in Special Education and Rehabilitation for Non-certified Personnel**

A non-certificated program is available for vocational rehabilitation personnel and other related fields to Special Education and Rehabilitation such as occupational therapy and physical therapy. Students must complete a minimum of six semester hours of prerequisite work in upper division or graduate courses in psychological, sociological, philosophical, historical foundations prior to being admitted to candidacy for the degree.

1. SPER 7000 - Psycho-Educational Problems of Exceptional Children and Youth 3 semester hrs.
2. Concentrations Available
(as above) 18-27 semester hrs.

D. Educational Specialist - Curriculum and Instruction (Special Education and Rehabilitation). Minimum requirements: 30 semester hours in the major concentration, 15 semester hours in the College of Education, a research core of 6 semester hours EDRS 7521, 8541 required), and 15 semester hours in the collateral area(s) outside the College of Education. Additional information pertaining to specific course requirements in the major and collateral areas may be secured from the Department of Special Education and Rehabilitation. Minimum total: 66 semester hours of graduate credit with a minimum of 9 semester hours selected from courses numbered 8000 or above

E. Doctor of Education - Curriculum and Instruction (Special Education and Rehabilitation). Minimum requirements: 48 semester hours in the major concentration, 12-21 semester hours in the College of Education, a research core of 9 semester hours (EDRS 7521, 8541, and 8522 or 8542 or 8543) and 21-30 semester hours in the collateral area(s) outside the College of Education. Additional information pertaining to specific course requirements in the major and collateral areas may be secured from the Department of Special Education and Rehabilitation. Minimum total: 99 semester hours of graduate credit with a minimum of 21 semester hours selected from courses numbered 8000 or above.

*Prerequisite to study leading to certification in this concentration: coursework and/or competency proficiency in (a) teaching of reading, (b) teaching of arithmetic, (c) measurement and evaluation and (d) survey of exceptional children.

**NCATE does not accredit programs for non-certificated personnel nor programs in higher education.

**SPECIAL EDUCATION AND REHABILITATION
(SPER)**

***7000. Psycho-Educational Problems of Exceptional Children and Adults. (3).**

A course for educators, students in behavioral sciences, and students beginning graduate study in special education and rehabilitation. Study of the relevant research dealing with the physical, mental, emotional, and social traits of all types of exceptional children and adults. Consideration of major current problems and practices in the development of various programs.

7001. Tests and Measurements for Exceptional Children and Adults. (3).

The primary emphasis is the development of an understanding of and/or ability to interpret the results of psychological and educational tests. Practice is provided in test administration, with emphasis on diagnosis and problems encountered in children and adults who are auditorily, orthopedically, visually, mentally, emotionally, and speech handicapped. PREREQUISITE: SPER 7000.

7002. Independent Study in Special Education. (3-6).

A course designed to offer opportunity and challenge of self-directive, independent study to students in special education, i.e., to develop the individual's ability as an independent student to enable the student to pursue needed study in a field in which appropriate courses are not being offered. PREREQUISITE: Consent of instructor.

†7003. Workshop in Special Education. (3-6).

A course designed for teachers and others who work with exceptional children and adults, allowing them the opportunity of intensively studying current methodologies, research, etc., in the various areas of exceptionality. (e.g. special summer institutes, etc.).

7101- Psycho-Social Aspects of Pre-School

8101. Education for Exceptional Children. (3).

This is a course designed to deal with the most recent and relevant research dealing with the physical, mental, emotional and social traits of the exceptional child in pre-school years. PREREQUISITES: SPER 7000, SPER 7001.

7121- Development Assessment and Educational

8121. Programming of Pre-School Education for Exceptional Children. (3).

This is a course designed to teach the methods involved in educational developmental assessment of exceptional children in pre-school years. The course also covers procedures of planning educational programs each one of five developmental areas: (1) personal-social, (2) fine-motor, (3) gross motor, (4) language development, and (5) perceptuo-cognitive. PREREQUISITE: SPER 7101/8101.

†7141- Practicum in Pre-School Education for 8141. Exceptional Children. (3-6).

A course designed to provide students with observation and supervised experience in pre-school educational setting working with young children who are exceptional. PREREQUISITE: SPER 7121/8121.

7201- Characteristics of the Educationally 8201. Handicapped I. (3).

A detailed examination of etiology, psychological, social, physical and learning related performances of the educationally handicapped in developmental life periods. Emphasis is upon the interrelated nature of handicapping conditions; their prevention, treatment and remediation. PREREQUISITE: SPER 7000 or equivalent.

7202- Characteristics of the Educationally 8202. Handicapped II. (3).

A detailed examination of etiology, psychological, social, physical and learning related performances of the educationally handicapped in developmental life periods. Emphasis is upon the interrelated nature of handicapping conditions; their prevention, treatment and remediation. PREREQUISITE: SPER 7000 or equivalent.

7211- Methods and Techniques of Teaching in 8211. Special Education I. (3).

Focus is upon developing teacher competencies in the educational processes, including assessment and remediation of cognitive, affective and psychomotor handicaps. PREREQUISITE: SPER 7000 or equivalent and consent of instructor.

7221- Methods and Techniques of Teaching in 8221. Special Education II. (3).

Focus is upon developing teacher competencies in the educational processes, including assessment and remediation of cognitive, affective and psychomotor handicaps. PREREQUISITE: SPER 7000 or equivalent and Consent of Instructor.

†7241. Supervised Practicum in Special Education (3-9).

Individualized field experience for developing professional competencies through participation in individual tutoring, group instruction, and/or other appropriate activities within public and/or private institutions or agencies. PREREQUISITE: Consent of Instructor.

7301. Psycho-Social and Educational Aspects of 8301. Deafness. (3).

Historical and current societal perceptions of the deaf; an analysis of the various patterns and effects of auditory impairment on children and adults; intelligence, personal and social adjustment, the psychological processes and how they affect the acquisition of language, speech and speech reading.

7411. Methods of Teaching Children with Learning 8411. Disabilities I. (3).

A course dealing with the basic remedial approaches with young children with learning

disabilities. The relationship between developmental sequence and educational practices will be stressed. PREREQUISITE: Consent of instructor.

412. Methods of Teaching Children with Learning Disabilities II. (3).

A course dealing with methods of teaching older students with learning disabilities. The relationship between academic subject matter and remediating learning deficits will be stressed. PREREQUISITE: SPER 7411.

431- Advanced Theories in the Classroom Management of Children with Learning Disabilities. (3).

This course will require that the students become thoroughly acquainted with the leading theories in the field of the education of children with learning disabilities. Emphasis will be placed on relating these to classroom methods, management of behavior problems, and the remediation of perceptual-motor problems. PREREQUISITE: Consent of instructor.

7441. Practicum in Teaching Children with Learning Disabilities I. (3).

A course designed to provide graduate students with supervised experiences in working with younger children with learning disabilities in various educational settings. PREREQUISITE: Consent of instructor.

7442. Practicum in Teaching Children with Learning Disabilities II. (3-6).

A course designed to provide graduate students with supervised experience in working with older children with learning disabilities in various educational settings. PREREQUISITES: SPER 7441 and consent of instructor.

501. Psycho-Social and Educational Aspects of Mental Retardation. (3).

A study of etiology, types, and nature of mental retardation. Research of the psycho-social and educational aspects of retardation is examined. Historical and current societal perceptions and definitions of the mentally handicapped; their social, emotional, physical, and learning characteristics and how they affect the learning process.

511. Clinical Problems in Teaching Mentally Retarded Children. (3).

Emphasis is placed on diagnostic and pedagogical techniques used with retarded children at the pre-academic level. Formal reporting is also emphasized. PREREQUISITES: SPER 7000 and SPER 7501.

7512. Curriculum and Instruction for the Educable Mentally Retarded. (3).

A study of organization patterns, curriculum designs, instructional techniques, and materials for the educable mentally retarded. Development

and application of teaching strategies to meet the needs of the educable mentally retarded will be stressed. PREREQUISITE: SPER 7501.

7513. Techniques of Teaching the Educable Mentally Retarded at the Secondary Level. (3). (formerly 6165).

Emphasizes the needs of the adolescent and young adult mental retardate. The work-study program, functional academics, and academic remediation is stressed. PREREQUISITE: SPER 7512.

7516. Instructional Programs and Provisions for the Trainable Mentally Retarded. (3).

A study of residential, public and private day school, and agency provisions for the trainable mentally retarded. Instructional objectives, techniques, and programs will be stressed. Behavior and progress evaluation and home-school-community relations will also be considered. PREREQUISITE: SPER 7501.

7521- Advanced Theory in Curriculum Development 8521. for the Mentally Retarded. (3).

A course to teach the theoretical and philosophical foundations for the experience-centered curriculum for the mentally retarded. Research will be studied and evaluated. Issues will be debated and proposals for curricular approaches will be presented and defended.

†7541. Supervised Practicum With the Educable Mentally Retarded I. (3-6).

Observation of demonstration teaching and participation in teaching. Experience in work-study programs is stressed.

†7542. Supervised Practicum with the Educable Mentally Retarded II. (3-6).

Observation of demonstration teaching and participation in teaching. Experience in work-study programs is stressed.

†7546. Supervised Practicum with Trainable Mentally Retarded. (3-6)

Orientation, observation, and teaching with trainable mentally retarded pupils.

7601. Educational and Medical Aspects of Crippling and Special Health Problems. (3).

This course consists of a detailed study of the various types of physically disabling conditions which cause either temporary or permanent decreases in educational proficiency. Special methods of instruction for these health conditions would be studied along with suitable adaptations of materials for such afflicted children within the framework of the public school organization.

7602. Education and Rehabilitation of the Cerebral Palsied. (3).

The content of this course deals entirely with the cerebral palsied. Etiology, diagnosis, characteristics, educational planning, vocational training, and placement are covered.

7611. Psycho-Educational Considerations of the Homebound and Hospitalized Children. (3).

The role of the homebound and hospital teacher is explored in the light of her duties and competencies. Emphasis will be placed on the somatopsychological aspects of motivation as they relate to providing a learning environment for the homebound or hospitalized child.

†7641. Supervised Practicum with Pupils Who Have Crippling and Special Health Conditions. (3-6).

Orientation, observation, teaching with pupils who have crippling and special health conditions.

7711. Methods and Material for Teaching Visually-Handicapped Children. (3).

A course primarily designed for teachers of the partially-seeing and blind within the framework of public schools, consisting of study in the growth and development of visual imbalance, and the environment and educational implications of visual problems; the historical background of special programs in the education of the visually handicapped, and the adaptation of the educational methods and materials to the teaching of such handicapped children.

7731. Teaching of Braille I. (3).

A course designed to give the basic fundamentals in Braille instruction, including the introduction of equipment for Braille writing, development of skill in the use of such equipment, the history and development of Braille and other instructional procedures for the blind.

7732. Teaching of Braille II. (3).

A continuation of SPER 7731, this course is designed to provide the student with a comprehensive knowledge of the actual reproduction and development of Braille. PREREQUISITE: SPER 7731.

7801. The Talented and Mentally Gifted. (3).

Historical and current societal perceptions and definitions of the talented and mentally gifted individuals; their social, emotional, and learning processes.

7901. Principles and Techniques of Rehabilitation Counseling. (3).

This course is designed to provide an overview of the broad field of rehabilitation. Topics include philosophical, social, psychological, and legal basis of rehabilitation, the rehabilitation process and the counselor's role and function in the rehabilitation process.

7903. Psycho-Social Aspects of Rehabilitation. (3).

An advanced graduate course to study the theories and research in the area of the social psychological adjustment of disability. The theories and research of Goffman, Wright, and Barker will be considered.

7911- Medical Aspects of Rehabilitation. (3). 8911.

Orientation to the medical profession, specialties and relationship to rehabilitation; familiarity with basic medical and clinical terminology, a survey of body systems, the basic functions, malfunctions; and the most common diagnostic and treatment procedures.

7921. Vocational Development and Occupation Information Service. (3)

Collection, evaluation and use of occupation educational and related information for rehabilitation. Familiarity with the development of job descriptions and vocational surveys. The study of labor market trends and theories of occupational choice.

†7941. Practicum in Rehabilitation Counseling. (3)

To provide student with supervised counseling experiences with rehabilitation clients. The course content will permit the application of appropriate theories, principles and practices of personal counseling. Sessions will be tape recorded, and critiqued by a member of the rehabilitation counseling staff.

†7942. Internship in Rehabilitation Counseling. (6)

To provide work-study students an opportunity further their professional competency through supervised field experiences. The course is offered in cooperation with the state agency and under the joint supervision of the rehabilitation agency personnel.

†7996. Thesis. (3-6).**8001. Seminar in Special Education and Rehabilitation. (3-6).**

Continuing series of professional seminars designed to provide a forum for discussion of major problems, issues, trends and research concerning exceptional individuals. May be repeated for a maximum of 6 hours. PREREQUISITE: Consent of instructor.

8002. Social-Psychological Aspects of Disability Conditions. (3).

An advanced graduate course which will deal with the state of knowledge concerning the social position of and attitudes toward the disabled. Considerable attention will be given to the somatopsychological influences on the social adjustment of the disabled and the effect of handicapping conditions upon the family and the society. PREREQUISITE: Consent of Instructor.

†8041. Advanced Practicum in Special Education and Rehabilitation. (3-6).

Supervised experiences under the direction of the professional staff in cooperation with university, local, state, and national educational and rehabilitation personnel. Experiences are designed to develop team interaction. May be repeated for a maximum of 6 hours. PREREQUISITE: Consent of instructor.

042. Advanced Internship in Special Education and Rehabilitation. (3-6).

A course designed to provide advanced graduate students with practical experience in the methods, theories, and practices of various local, state and national agencies; institutions of higher education; state departments of education, state institutions, and private residential facilities for exceptional children. May be repeated for a total of 12 hours. **PREREQUISITE:** Consent of instructor.

00. Administration and Supervision of Special Education Programs. (3).

This course deals with the major areas of school administration and supervision as they relate to special education. It is designed to prepare special educators to work with placement, in-service training, and supervision of professional personnel, organization of programs, financing and budgeting, physical plant facilities and working with related agencies. **PREREQUISITE:** Consent of instructor.

31. Advanced Seminar in the Psycho-Social and Educational Aspects of Emotional Disturbance. (3).

Analysis of the theoretical and research bases for present practices in the education and

treatment of emotional disturbance. Emphasis on dynamic, behavioral, and organic points of view and environmental factors within a psycho-social and educational framework. **PREREQUISITE:** Consent of Instructor.

8531. Socio-Cultural and Biological Aspects of Mental Retardation. (3).

A course dealing in depth, with the current thinking concerning the etiology of mental retardation. Emphasis will be placed upon prevention, treatment and education as important components which our society must recognize when dealing with mental retardation.

8011. Advanced Research Seminar in Special Education and Rehabilitation. (3). (formerly 8532).

A critical examination of current and classical research concerning the special education and rehabilitation of exceptional individuals. The procedures for conducting and reporting research are studied and compared. **PREREQUISITE:** Consent of instructor.

*Not required if equivalent courses taken at the undergraduate levels. (Substitutions must be made by the adviser).

†Grades of S, U, or IP will be given.

SPEECH AND DRAMA

PROFESSOR JOHN H. SLOAN, *Chairman*

Room 143, Speech and Drama Building

The graduate major in Speech and Drama may concentrate in Radio-Television-Film, Rhetoric and Communication Arts, or Theatre and Oral Interpretation, depending on his undergraduate background and experience. Students who choose to major in Speech and Drama will consult their major adviser as to the program of study. The student may request a non-thesis degree program through his adviser to the departmental graduate committee.

The program for the Master of Fine Arts in theatre is a two-year (46 hour) program. Qualified candidates may select one of two areas of concentration, either performance or production. All students in this program are required to take the following core courses:

Speech 7100 Bibliography	3
Speech 7551 Aesthetics	3
Speech 6551 Theatre History	3
Speech 6581 Dramatic Criticism	3
Speech 7584 Techniques in Instruction in Theatre	3
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Unconditional admission to the M.F.A. program is based on the following criteria:

1. An overall undergraduate grade point average of 2.75 from an accredited undergraduate institution.
2. A grade point average of at least 3.0 in the last 60 hours of undergraduate work.
3. A grade point average of at least 3.5 in the undergraduate major.
4. Acceptable scores on the Graduate Record Examination or the Miller Analogy Test.
5. Satisfactory completion of a qualifying audition.

Admission to Candidacy

The student may apply for admission to the M.F.A. degree candidacy upon the successful completion of fifteen graduate hours in the core curriculum. To be approved for admission to candidacy the student shall have:

1. A grade point average of at least 3.0 on a 4.0 system.
2. Removed all prerequisite departmental requirements.
3. Demonstrated a requisite level of competence through a qualifying examination.
4. A planned program which meets all departmental and graduate school requirements.

6101. Contemporary Theories of Language. (3).

An examination of the influence of language upon behavior, of the limitations of language as a communicative system, and of the relationships between language and thought.

6341. Interpersonal and Small Group Communications. (3).

Advanced theory in the logical, psychological, and sociological investigation of issues in small groups. **PREREQUISITES:** Speech 3341 and permission of instructor.

6361. History and Criticism of British Public Address. (3).

A study and analysis of British speakers and speaking from the 16th century to the present time. Emphasis will be placed on the speech situation, audience, issues and speakers. Such men as Fox, Pitt, Sheridan, Burke, Disraeli, and Churchill will be considered.

6362. Twentieth-Century American Public Address. (3).

An analysis of the rhetorical communication of twentieth-century America. The course examines the use of new persuasive methods to influence public opinion by leading rhetorical figures and movements. (May be repeated for a maximum of 6 credits.)

6363. Anglo-American Public Address. (3).

A history and criticism of public argument in the British Empire, 1660-1784. Special emphasis on the emergence of Whig liberalism, the American Revolution and the politics of Empire.

6371. Rhetorical Criticism. (3).

Study of the history and philosophy of the criticism and analysis of practical persuasive discourse. Exposure to and practice in the methods of speech criticism.

6372. History of Speech Education. (3).

An examination of speech educators, their theories, practices and place in history of speech education from classical to modern times.

6374. Directed Studies in Communication Arts. (3).

Independent research in areas of special interest including rhetoric, radio, television, and film. **PREREQUISITE:** Permission of Area Head.

6421. Interpretation of Poetry. (3).

Studies in the style and structure of poetry of specific types and periods, as related to the response and performance of the oral interpreter. **PREREQUISITE:** Speech 2411.

6431. Interpretation of Prose. (3).

Studies in the oral interpretation of prose fiction, with attention to various literary styles and structures. **PREREQUISITE:** Speech 2411.

6451. Interpretation of Shakespeare. (3).

Studies in the oral presentation of scenes from selected comedies, histories, and tragedies, with exploration of character and dramatic structure.

6511. Stage Lighting I. (3).

Study of elementary electricity and basic stage lighting techniques.

6512. Stage Lighting I. (3).

A continuation of Speech 6511. Advanced theatre lighting design and execution. **PREREQUISITE:** Speech 6511 or permission of instructor.

6531. Acting III. (3).

Acting problems with continued work in acting styles. Term length assignments of scenes designed to develop ensemble acting skills.

6532. Acting III. (3).

A continuation of Speech 6531.

6551. Studies in Theatre History. (3).

Special problems in theatre history: the men and ideas which have shaped the theatre of the western world from antiquity to the present.

6561. Stage Costuming I. (3).

Study of basic costuming techniques.

6562. Stage Costuming I. (3).

A continuation of Speech 6561. Survey of historic dress and the planning and rendering of costume designs. **PREREQUISITE:** Speech 6561 or permission of instructor.

6563. Theatrical Design II. (3).

A lecture-laboratory course covering the techniques of painting flat scenery for the stage.

6564. Theatrical Design II. (3).

Total production design—the discipline of costume, scenery, and lighting design to overall production style.

6571. Playwriting. (3).

A study of the theory and principles of writing plays for the stage. Practice in writing either short or long play.

6581. Dramatic Theory and Criticism. (3).

The major documents in dramatic theory and criticism from Aristotle to the present.

6802. Internship. (1-3).

Field studies in communication. Supervised practical work with a government institution, film company, or TV station. Written analysis of experience required. **PREREQUISITE:** Permission of Area Head.

6810. Broadcast Regulation and Program of Policies. (3).

The role of the agencies controlling broadcast

and the development of regulation and policies concerning operations and programming.

811. Radio and Television Programming. (3).

Analysis of individual program formats (with examples); use of this information along with ratings and other audience research to study the design of program schedules.

831. Radio and Television Sales and Advertising. (3).

The relation of radio and television advertising to the station, network and station representative; the role of sponsors, agencies and other allied groups.

842. Advanced Television Production. (3).

Advanced techniques of studio and small-format TV production including staging and direction of programs.

851. Development of Contemporary Film. (3).

Study of theatrical film from 1925 to the present. Study and critique of selected films.

852. Origins of Film. (3).

Study of the origins and growth of the motion picture industry through the silent film era. Study and critique of selected films.

853. Documentary Form in Film. (3).

History and criticism of documentary, educational, and industrial films. Study of the non-fiction form.

854. Documentary Form in Broadcasting. (3).

History and criticism of non-fiction broadcasting and cablecasting.

857. History of American Broadcasting. (3).

A comprehensive study of the history of the broadcasting industry in the United States as it developed from 1895 to the present. Use of primary sources.

871. Radio and Television Station Management. (3).

Theories of management; study and analysis of the special problems and situations confronting the manager of the broadcasting station in personnel, operations, government regulations, programming and sales.

892. Advanced Film Production. (3).

Techniques of sound film production, direction, and editing. Production of films. PREREQUISITE: Permission of instructor.

921. Play Production for Secondary Schools. (3).

A survey of the problems of the play director in high school. The course considers: choosing the play, casting, directing, technical aspects of production; then relates these items to the student, the school, and the community.

7100. Bibliography and Methods of Research. (3).

The examination of bibliographical aids for the study of theatre. A survey of the types of research in theatre, and the presentation and documentation of scholarly writing in theatre.

7330. Introduction to Research in Communication. (3).

Survey of research methodologies and types of research in the field of communication. Evaluation of selected studies in communication. Introduction to principles for thesis preparation.

7331. Seminar in Communication Theory. (3).

Study of current multidisciplinary communication theories, models, systems, dynamics, barriers, breakdowns. Methodological approaches to studying communication behavior. Topics vary each semester. (May be repeated for a maximum of 6 credits.)

7360. Seminar in Rhetorical Theory. (3).

Intensive studies of the development of rhetorical theory from c. 500 B.C. to the present. Topics will vary each semester. (May be repeated for a maximum of 9 credits.)

7362. Seminar in Public Address. (3).

An intensive study of selected topics in the analysis and criticism of public arguments. Emphasis on cross-cultural comparison of arguments and appeal in common rhetorical situations. Repeatable to a maximum of six credit hours.

7364. Systems of Argument. (3).

Intensive study of argument as a means of inquiry and persuasion in rhetorical and dialectical discourse. Explorations of relationships between theories of argumentation and forms of speech such as political and legal oratory, discussion, and debate. Readings will be selected from Aristotle, Cicero, Kant, Whately, Burke, Schopenhauer, Toulmin, Ayre, *et al.*

7365. The Rhetoric of Literature. (3).

Examination of rhetorical elements in creative discourse and the approach to such discourse through the techniques of rhetorical criticism. Special attention to dramatic literature.

7367. Seminar in Rhetoric and Poetic. (3).

Examination of the relationships between predominantly persuasive and fictive modes of discourse.

7368. Macrorhetoric. (3).

A study of the relationships between public deliberation, propaganda, and social change. Emphasis on movement theory, the formation and function of ideologies, strategies and tactics of agitation, and the process of public value formation.

7420. Seminar in Language and Performance Styles. (3).

Studies in mimetic language forms and functions as related to performance realities. (May be repeated for a maximum of 6 credits.)

7421. Seminar in Individual Authors. (3).

Depth interpretation of the work of a selected author.

7431. Directing Interpreters Theatre. (3).

Studies in script preparation; directing techniques for group interpretation of prose, poetry, and drama.

7461. Studies in Oral Interpretation. (3).

Advanced work in special problems related to the interpretation of poetry and prose styles.

7521. Stage Direction. (3).

A study of the principles governing the production of a play from the analysis of the manuscript through its presentation upon the stage. Students will direct scenes or one-act plays as part of their classwork. (May be repeated for a maximum of 6 credits.)

7551. Seminar in Theatre Aesthetics. (3).

A survey of aesthetic theories affecting the theatre from Classical Greece to the present. Special attention will be given to the study of the interrelationship of theatre and the other arts. (May be repeated for a maximum of 9 credits.)

7552. Seminar in American Theatre. (3)

A study of the plays, players and playwrights of the American Theatre from its beginning to 1920.

7553. Studies in American Theatre. (3).

Specialized study of the American Theatre from one or more points of view such as a study of the plays, players, and playwrights from 1920 to the present; the development of the physical playhouse; the stage director; and dramatic criticism.

7554. Seminar in Directing. (3).

Specialized study of advanced theories and techniques of directing for the theatre with emphasis on the demands of contemporary theatre architecture. (May be repeated for a maximum of 9 credits.)

7555. Seminar in Stage Design. (3).

Specialized study of advanced theories and techniques of theatre design with particular emphasis on the demands of contemporary theatre architecture. (May be repeated for a maximum of 9 credits.)

7556. Theatre Planning and Management. (3).

A study of the principles of theatre planning and management for educational and regional theatres. (May be repeated for a maximum of 9 credits.)

7558. Seminar in Modern World Drama. (3).

Conference course in advanced study of world drama from approximately 1900 to the present with emphasis on recent trends in playwright and production. (May be repeated for a maximum of 6 credits.)

7571. Advanced Playwriting. (3).

A continuation of the theories and practice playwriting with the object of achieving finished script, ready for production. PRER QUSITE: Speech 6571. (May be repeated for maximum of 9 credits.)

7581. Seminar in Dramatic Types. (3).

A study of the four main types of drama - tragedy, comedy, farce, and melodrama - from classical modern times. (May be repeated for a maximum of 6 credits.)

7582. Research in European Drama. (3).

Conference course in advanced study of the drama of Europe from the Middle Ages to 1900. (May be repeated for a maximum of 6 credits.)

7583. Research in Theatre. (3).

Research in specialized areas of drama and theatre, such as dramatization of American and/or English literature; history of English and American drama criticism; Renaissance treatises on theatre art and architecture; history of costume, *et cetera*. (May be repeated for maximum of 6 credits.)

7584. Techniques of Instruction in Theatre. (3).

Supervised experience in the approach to teaching basic theatre courses, both aesthetic and production subjects, with the development of the specialized skills required for instruction in the performing arts.

7804. Seminar in Media Criticism. (3).

Study and application of critical theories to media content, particularly plays, television programming, speeches and films. (May be repeated for maximum of 6 credits.)

7805. Seminar: Literature of Mass Communication (3).

Survey of the literature of mass communications. This course may be taken two times (6 credits total). Topic area will vary each time offered.

7806. Seminar: Trends in Mass Communication. (3).

A study of a critical issue or issues facing communications today. Topics will vary each time offered. (May be repeated for a maximum of 6 credits.)

7807. Seminar Mass Communication Research and Theory. (3).

A survey of specialized areas of mass communication research and theory with an analysis of the tools necessary for studies of a historical

theoretical and statistical nature. This course may be taken two times (6 credits total). Topics will vary each time offered.

08. Seminar: Mass Communication and Society. (3).

A study of the interrelationships between mass communications, the individual and society. This course may be taken two times (6 credits total). Topics will vary each time offered.

09. Seminar in Communication History. (3).

In-depth study of selected topics in the history of communication, including public address, film, and broadcasting. (May be repeated for a maximum of 6 credits.)

12. Techniques for Television Teaching. (3).

A study of the techniques involved in producing, teaching, and classroom utilization of instructional lessons, emphasizing the use of visual materials, the teacher's appearance on camera, and methods of lesson preparation, with practical experience in the television studio.

31. Seminar in Problems in Speech Education. (3).

Special study of selected current problems. Individual studies will be pursued with group analysis and discussion at regular class meetings.

7991. Seminar in Comparative Media. (3).

To demonstrate through intensive analysis what happens to the form and content of a creative work in its various adaptations: novel, condensation, stage, movie, and television. Open to all Speech and Drama majors and English majors.

7993. Special Problems. (1-3).

Individual investigation of special research projects not included in thesis.

7994. Special Problems. (1-3).

(Same as Above)

†7995. Production Practicum. (3-6).

Creative performance or production project suitable for public presentation and/or a practical application. Project to be determined in consultation with and directed by the student's supervisory committee.

†7996. Thesis. (3-6).

†Grades of S, U, or IP will be given.

TECHNOLOGY

(See ENGINEERING TECHNOLOGY)

5

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Ph.D. (1961), Michigan State University; C.P.A. (1960), Michigan;
C.P.A. (1968), Tennessee.

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M.S. (1951), University of Kentucky; C.P.A. (1965), Tennessee.

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Ph.D. (1970), University of Iowa.

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D.M.A. (1972), Eastman School of Music, University of Rochester.

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Ph.D. (1957), University of Colorado.

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Ph.D. (1967), University of Alabama.

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Ph.D. (1958), Michigan State University.

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Ph.D. (1967), University of Miami (Florida).

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Ph.D. (1955), University of Colorado.

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Ph.D. (1968), University of Georgia.

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Ph.D. (1965), Vanderbilt University.

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Ph.D. (1971), Ohio University.

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- 42. Art Building — AB
- 11. Athletic Office
- 40. Brister Library — BL
- 35. Browning Hall
- 19. Cafeteria
- 13. Campus School — CS
- 4. **Richardson Towers**
- 33. Clement Humanities Bldg — CL
- 48. College of Bus. Adm. — BA
- 29. Education Building — ED
- 32. Ellington Biological Bldg. — EB

- 44. Engineering — EN
- 23. Field House — FH
- 54. Fraternity Row
- 57. Education Bldg. — EA
- 51. Education Building — LS
- 22. Old Gymnasium (WKNO-TV)
- 39. Hayden Hall
- 30. Heating Plant
- 38. Information Center
- 43. Jones Hall — JN
- 12. Jones Hall — JO
- 1. Law Building — LW

- 14. Maintenance Building
- 15. Manning Hall — MN
- 49. **Winfield Dunn Building — WD**
- 18. McCord Hall
- 30. Mendenhall Bldg. — MJ
- 34. Mendenhall Bldg. — MJ
- 10. Myers Hall
- 3. Music Building — MU
- 7. Nellie Angel Smith Hall
- 53. New Mens Dorm
- 46. Physical Ed. Bldg. — PT
- 36. Patterson Building
- 52. Physical Ed. Building — PB

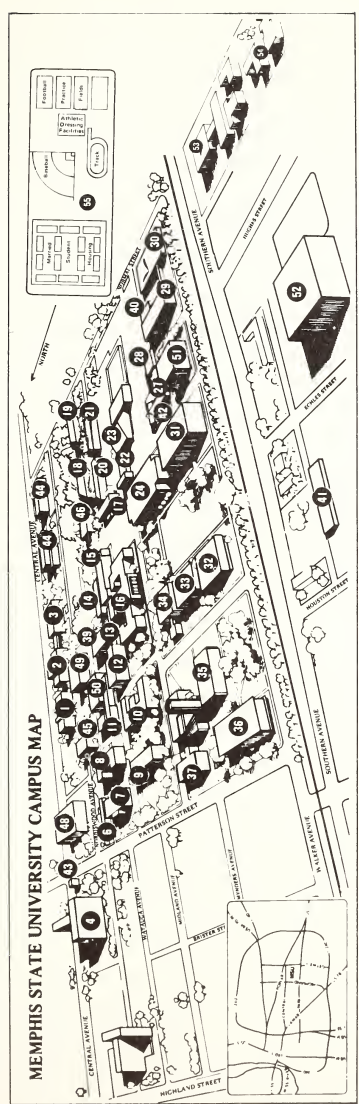
- 41. Printing Services
- 45. Psychology Building — PY
- 8. Rawls Hall
- 21. Robison Hall
- 37. Rockwell Hall — S
- 31. South Campus
- 55. South Campus
- 28. Special Educ. Building — SE
- 2. Speech and Drama Bldg. — SD
- 46. Student Health Center
- 44. Student Union Building — T
- 24. University Center
- 9. West Hall

- Speech and Hearing Center — SHC

- CHU
- Chucalissa — CHU
- Child Development Center — CDC

Locations not shown on campus map.

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